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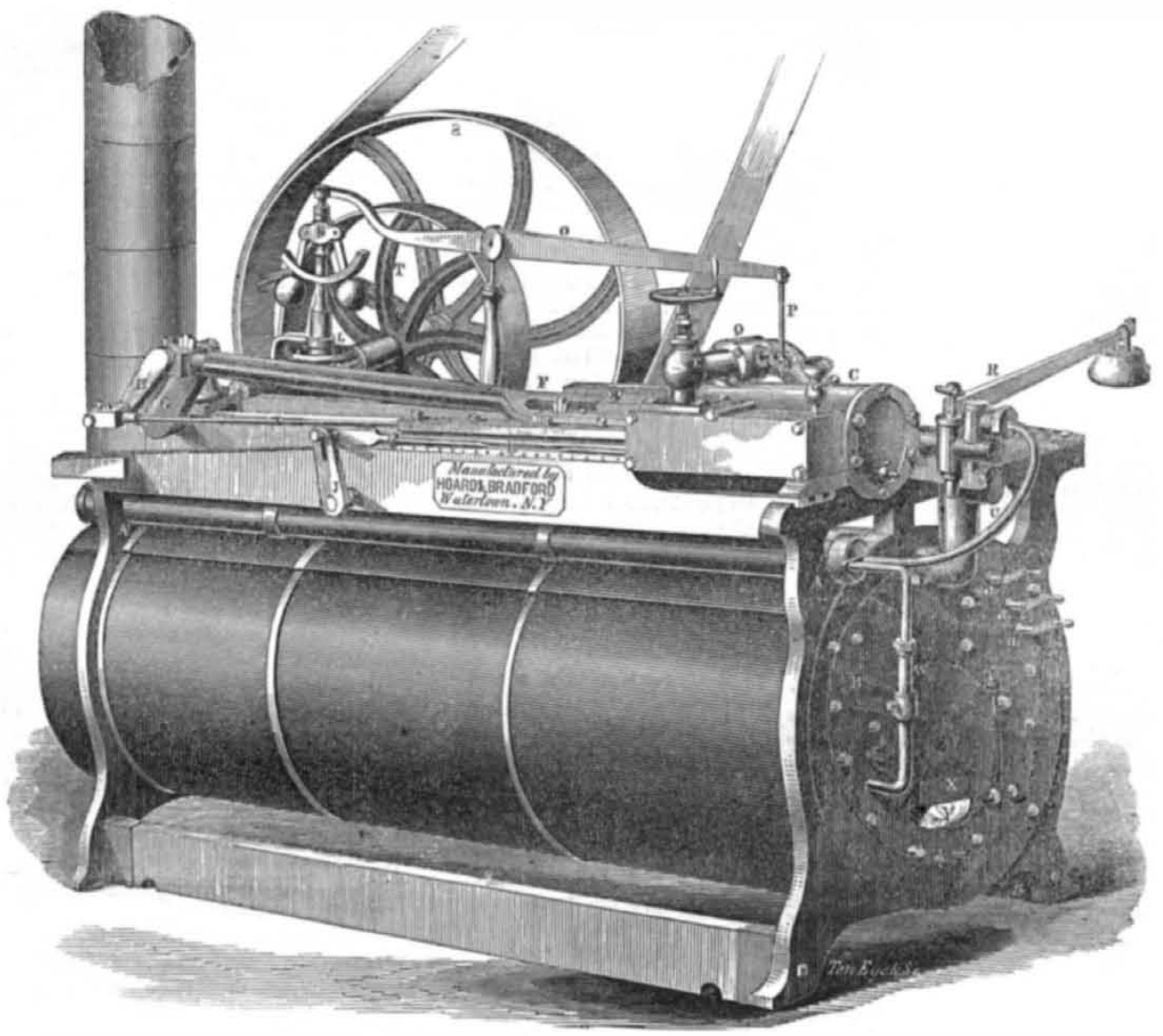
PORTABLE STEAM ENGINE.



The world is growing wiser and lazier every day. People have found that in most varieties of hard labor, it is easier to employ the action of the elements than it is to drudge and toil themselves. Hence it is that the steam engine, which is, after all that has been said by the inventor of the *carbonic*, and *caloric*, and *static pressure* engines, the only reliable power which can be used in any and all places—is being applied to almost every conceivable variety of manual labor. It is compelled to spin and to weave, to wield the hammer and drive the plane; it has been harnessed to the car, and hitched to the plow; in short, all the tedious drudgery which our forefathers performed with their own muscles and sinews, is now done to a greater or less extent by this ready slave of the human intellect. Muscles tire, but the steam engine never grows weary. So long as it is supplied with food and drink, and properly cared for, it will exert its ceaseless energies night and day without rest or sleep, obedient to the slightest beck of its guiding spirit, the engineer.

Hence the want of small portable engines is seriously felt by the public. The farmer wants them to thresh his grain and cut his straw, to saw his wood, and as soon as they are properly constructed to draw his plow. The mechanic wants them for the various operations of his workshop, the manufacturer in a small way wants those that require but little room, and can be easily moved about as he may change his residence, and we hope to see the day when they will be made so cheap and portable that almost everybody will have their steam engine, that it will become almost a necessity of the household.

The engine and boiler, with their appurtenances, which are represented on this page is intended to supply to some extent this growing want. As our readers will perceive, it is all in readiness to kindle a fire and go to work. We shall not so far insult our readers as to give a detailed description, although our engraver, from the force of habit we suppose, has carefully lettered the engraving, but we present it in answer to enquiries which we are constantly receiving relative to such engines. Our readers can see it and judge for themselves whether it be what they want. All further enquiries should be addressed to the manufacturers, Hoard & Bradford, Watertown, N. Y., or to their agent, S. C. Hill, in this city.

Manufacturing Flour.

MESSRS. EDITORS—I read with considerable attention, in your valuable paper, Mr. Bonnell's patent flouring process; but where is its superiority over other processes? The objection to his process is two-fold:—first, the attention of an inventor should be directed to economy in construction, and that of the practical mechanic to constructing and arranging his machinery, so that the power which he has to apply may be used in the best possible modes on combined scientific and practical principles. Mr. Bonnell uses in his process an auxiliary mill and an extra pair of elevators; extra machinery in manufacturing the flour takes more power to drive it; and here he appears to have overlooked economy in his patent process. The second is, his process requires the bran to be fed into his auxiliary mill and ground along with the offal or middlings. By this means bran is always present with the offal, and keeps the meshes of the cloth open,—allowing of free bolting; the close grinding of the bran along with the offal, rubs off a quantity ot snuff-colored stuff from the bran, which bolts through with the flour, and injures its quality; so that which is saved in quantity by this process is lost in quality.

And when we consider the fact, that wheat is composed of a very thin skin, filled with flour, which, if manufactured properly, ought to produce the following qualities, superfine flour, seconds, shorts, and bran, one grinding is enough, as all practical millers will admit. Of that quality called offal or middlings, which, when ground a second time, produces flour called "fine," it is unfit for bread, it being too dry to be palatable. If wheat is ground as it should be, the offal or middlings will be too poor for any other purpose than cattle feed. I never found any difficulty in keeping the millstones properly dressed and in good condition at all times, to make all the flour out of the wheat in the first grinding, taking out all the gluten necessary to give the flour "a strong and good body." Out of two hundred and fifty pounds ot wheat, I make a barrel of flour. You cannot grind flour too fine, if the stones be properly dressed for that purpose. In manufacturing flour, and in making the best yield out of wheat, the stones are required to be kept in correct order, as they are the entire "key" (not the bolting process) which regulates the profits of the miller. Attention cannot be expended more profitably than in keeping the stones in proper order.

Birmingham, Pa. TOLL DISH.

Resinized Oil of Turpentine.

F. Kuberth, in the "Chem. Pham. Centralblatt," presents the following method of obtaining a peculiar oil from turpentine resin:—

"Take the resin deposited from the oil of common turpentine, which is kept for some time in casks or other vessels, and pour some oil of vitriol among it, until it becomes of a cream like consistence. It is then distilled in a glass retort, and furnishes a colorless oil, which becomes brown when exposed to the air. Its odor resembles that of rue and rosemary. Oil of turpentine, when similarly treated, does not furnish this oil."

Foreign Scientific Memoranda.

HEAT AND PRESSURE.—A very ingenious application of scientific principles to determine the point of fusion in a closed vessel, and a remarkable result from high pressure on fluids, were incidentally mentioned by the President of the British Association in his inaugural address.—Experiments were instituted by Mr. Hopkins, Mr. Fairbairn, and Mr. Jowle, to determine the effect of increased pressure in raising the temperature of fusion. The substance operated on was inclosed in a very strong metal chamber, and the pressure was produced by water forced by a plunger acted on by a long lever down an iron tube three quarters of an inch thick. Wax was the substance employed; and it was of course essential to ascertain the exact moment that it became fluid when heat was applied.—As all the apparatus must necessarily be opaque, the melting point could not be seen. The difficulty was ingeniously surmounted in the following manner: a small magnet was enclosed on the top of the wax, whilst outside the metallic chamber containing it, and on the same level, a nicely balanced magnetic needle was placed. The enclosed magnet acted on the needle and deflected it, at a certain angle, from its natural position; but the instant that the wax melted, the magnet fell to the bottom, and the vibration of the needle immediately indicated the fact. It was thus ascertained that under a pressure of thirteen thousand pounds on the square inch, wax requires thirty degrees additional heat to melt it; about one-fifth of the whole temperature at which it melts under the pressure of the atmosphere.

During the experiment, it was observed that the plunger gradually descended in the tube, and on examination it was discovered that the water had, under the influence of the enormous pressure, been forced through the pores of the iron, three-quarters of an inch thick. On afterwards examining the tube closely with a lens, not the least opening could be seen by which the water could have escaped. This result far exceeds that of the celebrated Florentine experiment, by which the incompressibility of water was supposed to be proved by its forcing a passage through the pores of a globe of silver, very thin in comparison with the three-quarter inch iron tube. It was not ascertained whether any of the melted wax had been forced into the pores of its containing vessel.

Omission.

In our notices of the threshing machines in the Crystal Palace a few weeks since, we omitted to notice that of Zimmerman & Co., of Charlestown, Va. The reason simply was, it was entirely removed from the others, being on the lower floor. We have seen it since, and should think it a very good machine, cheap and durable.

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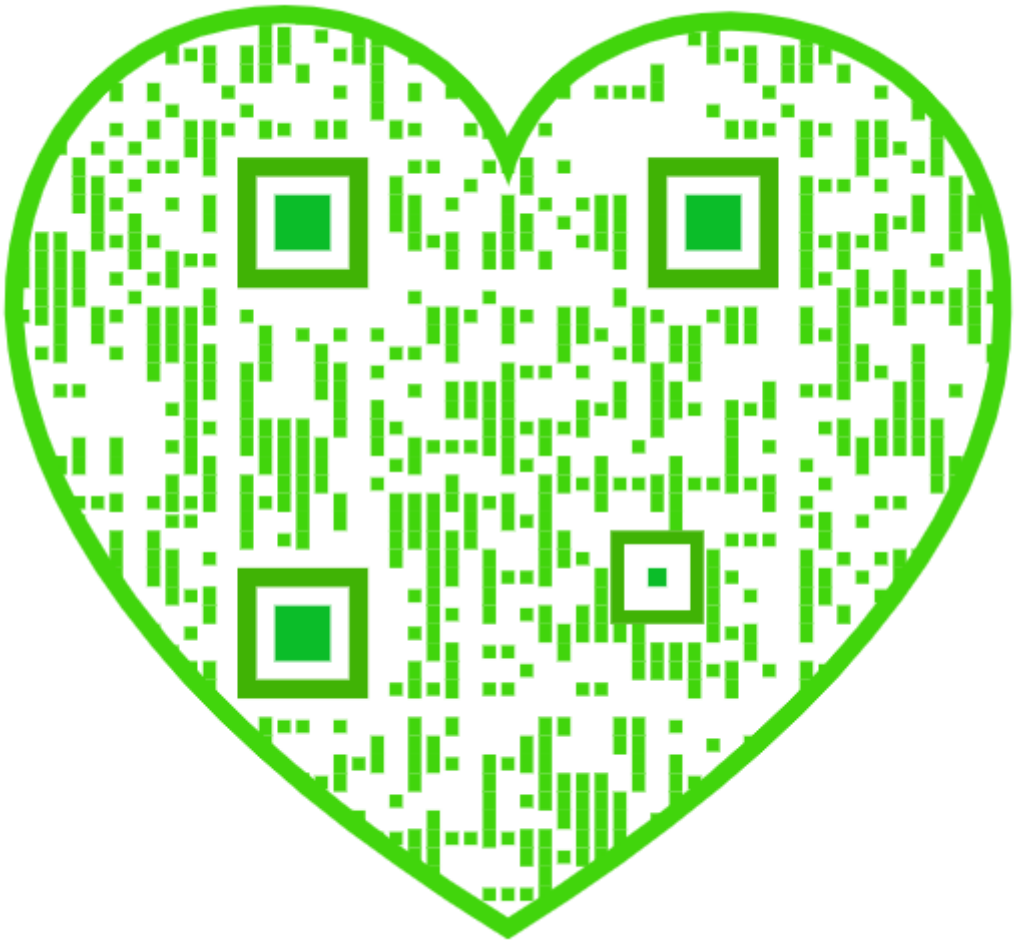

Carburetted Hydrogen.

Messrs. Editors—I was some years ago led to inquire what was the cause of the blue flame immediately around a gas burner, and at first supposed that it was owing to the impurity of the gas, but experiment led me to a different conclusion. Remembering the well-known phenomenon, that in soldering any article of jewelry, the white flame of a candle was, on the application of the blow-pipe, converted into a blue light similar to the flame of alcohol, it led me to make the following experiments:—I procured a common hog's bladder, and after expelling all the air, I tied the open end over a common gas burner, and inflated it with gas, —carefully removing it, I inserted a burner into the open end, and tied it securely. Putting it under my arm, the results were these: with a moderate pressure of the arm I obtained the usual light, but on increasing the pressure to a certain extent, I was surprised to find that instead of obtaining more light, the gas burned with a perfectly blue flame, and the room which was in the first place illuminated, suddenly became quite dark, although it is evident that with the increase of pressure there was an increased consumption of gas. I also found that the heat was in the first case moderate, and in the second very intense, so much so that it readily melted gold and silver. Inflating the bladder again, as before, with the exception of adding about one-fourth common air, I found it to burn with the blue flame, but I could not produce the white light, however I might vary the pressure, but as before, it produced a very intense heat.

Recently I have made some experiments with what might be called the sieve burner, now frequently met with in restaurants, where it has taken the place of alcohol, heretofore used for keeping dishes hot, for which purpose, as well as many others, it is really a very excellent as well as economical article. I constructed one very cheaply by drawing some fine brass wire gauze over the mouth of a common pint tin cup, and making a hole in the bottom sufficiently large to fit tightly over a gas burner. I placed it over the burner, turned on the gas, and lighted it, when I found it to burn with a blue flame, not distinguishable from that of alcohol. Putting a cup containing a pint of water over it, I found it to boil it 21 minutes, with a consumption of 45 feet of gas. Taking off the water as well as the sieve burner, without touching the stop-cock, I lit the ordinary burner, and placing the same cup, with the same quantity of water as before, I found it to boil in 62 minutes. I subsequently tried the sieve burner over again, but turning on the whole head, the gas first issuing as before through a common four feet burner, and then through the sieve. In this case the water boiled in ten minutes, and I have no doubt that with properly arranged apparatus (mine being very imperfect) the same quantity of water can be made to boil in five or six minutes. This great disparity between the heating qualities of the two burners, I believe to be partly owing to the lamp-black which always forms under the vessel over the usual white light, but which is entirely absent when using the sieve burner. Lamp-black, as is well known, is a bad conductor of heat, and by its presence prevents the heat from penetrating to the fluid; yet I do not think that is the entire cause. It appears to me to be owing to the converting of light into heat, as the sieve burner as well as my other experiments appear to do, and this in spite of the well known law, that light and heat are two separate and distinct elements, yet my experiments with the bladder would appear to warrant the conclusion, that each is convertible into the other, for with a very light mechanical pressure I obtained, what you might call all light, and with a strong pressure, all heat; yet neither the one nor the other were what could be called absolutely disconnected from the other. From my first experiment I was led to very important practical conclusions; they are these, that the gas company can, by increasing the mechanical pressure, force you to consume more gas; although with the increase there is no increase of light, and as it is for the light you want it, it is evident you are paying for a thing for which you get no equivalent—at least not the kind of equivalent you want; and it is to their interest that your bills are large, although they furnish you with the quantity of gas they charge you for, as they can make a large quantity at a much cheaper rate than a small one. This fact is well illustrated in our city. The Northern Liberties Gas Company cannot afford to sell their gas for less than $3 per 1,000 feet, whereas the City Gas Co. charge $2; this company has about four times the consumers that the Northern Liberties has, yet one makes about the same profit as the other, Also they can, if they choose, adulterate their gas with air, which, if added in small quantities, will be very difficult to detect. I also endeavored to catalyze the gas, by passing it through spirits of turpentine, with a view of improving the whiteness of the light, but without success.

Jno. F. Mascher.

Philadelphia, Nov. 21, 1853.

[We request particular attention to the foregoing experiments, and the conclusions deduced from them by Mr. Mascher. This is a subject which concerns all who consume gas, as it relates to the quality of their light and its cost. It is also a question of no little philosophic importance; it is confirmatory of our opinions respecting light and heat. We believe that electricity, light, and heat are convertible into one another, when the proper conditions of developement are present.—[Ed.

More about the Potato Disease.

On page 72, this volume, "Scientific American," we published some remarks of Herapath, the eminent English chemist on the potato disease. Since that time he has sent another communication on the subject to the "London Chemical Gazette," which describes the modes of treating potatoes for planting in order to carry out the recommendation presented in the article referred to, for preventing the disease. This disease he attributes to the methods of cultivation long persisted in, in rearing and propagating this excellent esculent. He chiefly blamed the indiscriminate use of organic manure, instead of mineral fertilizers, which latter, were chiefly used when the potato was first introduced.—The changes which he proposed in treating this root were; 1st, in carefully drying the seed potatoes. 2nd, in steeping them in a solution of the sulphate of copper; 3rd, in planting them in *poor* well-drained land; 4th in substituting mineral for barn yard manure. The following information he now presents for carrying out these recommendations; and since potatoes are selling at one dollar per bushel in this city, it is certainly worth the attention of our farmers to try by every means to improve their potato crops both in quantity and quality:

Dessication of Tubers.—The apparatus employed to effect this object should consist of a large heated chamber, similar in character to the so-called "stoving room" of a sugar refinery, or of a long room fitted up with shelves for the reception of the roots, and heated by means of steam pipes, or stoves placed at intervals, and so arranged that a current of air can be made to pass over the tubers, which can be thus rapidly and effectually dried. The same end may be attained on a small scale by exposing the potatoes in layers on the floor of a warm room, or on a malster's kiln; precautions being taken to turn them over occasionally until they have become sufficiently desiccated, and thus promote free circulation of the air; but in practice it will be doubtless found preferable for some enterprizing parties to undertake the drying of the roots, which may be afterwards retailed to the agriculturists, &c. Great care, however, I find, must be taken in performing the operation; otherwise the vitality of the tubers is destroyed. A long-continued exposure in a dry atmosphere, at a moderate temperature, appears to afford the best results. The latter, under any circumstances, should never much exceed 110° or 112°. If the process has been well carried out, the dried roots, when rolled up in a damp cloth, or buried in the ground for a few days, will again be plump and fresh in appearance; whereas, on the other hand, if too high a temperature has been employed, they will, when thus treated, still remain comparatively hard and dry.

Steeping or Pickling Process.—Into a gallon of boiling water put a quarter of a pound of blue vitriol or blue stone (sulphate of copper) and stir the solution well from time to time with a piece of stick until the salt is completely dissolved. When the temperature of the mixture has been so lowered by evaporation and exposure that the hand of the operator can be immersed without any inconvenience, the dried tubers should be thrown into the vessel containing the "pickle," in which they should be kept for one or two hours, care being taken to stir them well two or three times during that interval. After they have been removed from the cupreous solution and well drained, they should be dusted over with a little air-slacked or mild lime, and planted in the usual way.—When, however, the drying process before described has not been resorted to, the tubers should be allowed to remain in the copper solution for thirty or thirty-six hours, and the pickle should be made of double strength.

Preparation of the Mineral Manures.—Mix intimately—

30 lbs. of wood ashes,
15 lbs. of calcined bones, in fine powder,
10 lbs. of gypsum,
20 lbs. of common salt,
30 lbs. of air-slacked lime, and
7 lbs. of nitrate of soda.

Whilst planting the potatoes, into every hole put about half an ounce of the above compost; cover the latter over with some earth, and then plant the tubers in the ordinary way. This manure may be easily prepared by any one at a very trifling cost, and may be measured out by means of a small tin cup, which, for convenience sake, should be suspended to the waist of the dibbler. On large farms, where the roots are set in drill-furrows, the compost may be more readily distributed by the manure-drill, or by hand in the usual manner. On most soils, however, a simple top-dressing of lime and salt, in the proportion of two bushels of lime to one of salt, will be doubtless found sufficient; the manure being employed at the rate of 50 or 60 bushels per acre. Where the land is rich, the admixture of cinders, coal ashes, or shell-sand with the soil will be found decidedly beneficial.

Alleged New Motive Power.

The "Paris Presse" says that a certain Dr. Carosio, of Piedmont, has invented an electro-magnetic apparatus, called the hydrodynamic pile, which, he asserts, will create a new motive power, and effect a revolution in the production of light and heat. The apparatus is based on the theory of electro chemical equivalents, and on what is called Faraday's law—namely, that the electric current is equal to the chemical action, and that, consequently, the electricity which serves to decompose water into oxygen and hydrogen gas, is equal to that resulting from the combination of two gases in forming water. The apparatus consists—1. Of an electric battery formed of several cells on the prinple of Grove's pile, in which the electric current is produced. 2. Of a series of cells in which water becomes decomposed, and produces oxygen and hydrogen. 3. Of two reservoirs in which the two gases accumulate under a pressure of several atmospheres. 4. Of two cylinders in which movement is produced by the elastic force of two gases, after having produced the movement, are reconducted anew, to be afterwards distributed in the cells of the battery to produce the electric current; and of some other machinery seeming to regulate the equilibrium of the pressure of the two gases to distribute acidulated water, &c. By this apparatus, Dr. Carosio obtains—1, the formation of water by the combination of oxygen and hydrogen gases. 2, an electric current always in proportion to the said combination. 3, the decomposition of the water in oxygen and hydrogen gas proportionate to the electric current, and equal to the quantity of water recomposed; and 4, the separation of the gases at the very point at which they begin to develope themselves. The gases, in passing into two reservoirs, in which they are retained under the pressure of a given number of atmospheres by the augmentation of their elasticity, produce movement by means of a mechanism similar to that of ordinary steam engines. 5, finally, after having produced the mechanical effect, the two gases are separately re-conducted into the apparatus, in which the recomposition of the water takes place, to repeat the same series of phenomena—the electric current, the decomposition of water, and movement."

This learned doctor is certainly a very ignorant man as it respects the application of forces to propel machinery. His plan is like the employment of a steam engine to pump water to the top of a fall, to run down again and drive a water wheel. He employs the electric current to decompose water, and then uses the force of the gases so produced to drive machinery. This force is said to be equal to that of the electric current which decomposes the water. Why then does he not employ that force first by an electro-magnet, instead of employing it second-hand. He is great upon effects, but blind to causes. The re-conducting of the gases back to the battery, is something altogether too vast for our comprehension. If the description had stated that he employed the electric current as a motive power through electro-magnets, and used the pressure of the hydrogen gas generated in the battery for mechanical purposes, then we would have concluded that he understood something of the matter, but no more than others.

Hydrochlorate of Soda in Bread.

Will you allow me just room enough to warn your readers against a very plausible recipe for making bread with muriatic acid and soda? It would be a nice recipe if the muriatic acid were pure. But I have found, from six years' experience in using it in cooking, (confirmed now by an assay of Dr. A. A. Hayes) that it contains, as ordinarily made, lead enough to give a man very severe dyspepsia, accompanied with pain in the bowels, weariness and low spirits. Three years ago, my physician told me I must be taking lead in some form; but I did not then suspect my muriatic acid of containing it. Dr. Hayes' assay has, however, shown me how difficult it is, sometimes, for us to detect the exact source of an admitted evil.

[The above is from the "Boston Traveller," and should be a caution to all housekeepers.—It was supposed by many that as the combination of muriatic acid (hydro-chloric acid) with soda formed common salt, liberating carbonic acid gas in the act of union, that these were the best substances which could be employed in making bread by instantaneous *raisings*.—It is difficult, however, to obtain pure acid, and the impure cannot be used with safety. After much consideration of the subject, we believe that raised bread made by any other process than vinous fermentation—not effervescence—is neither sweet nor healthy.

The Pacific Railroad.

We are glad to see that the Wall Street plan for swindling the public, by bribing Congress, meets with no favor from the public press. There is not now a single journal of respectability that dares openly to advocate it, while there are very few but what are energetic in their opposition to it. We are glad to see this: it speaks well for the trustworthiness of the press in general, as guardians of the public welfare. The "N. O. Bulletin" is very much astonished at the magnificent subscription of the ex-Secretary, rather broadly hinting that if his debts were paid, very little would be left for any sort of subscription. It even goes so far as to assert that one of the stockholders expressly declared that there was no intention on their part to pay a cent upon their subscriptions. An instalment of one mill (!) on the dollar has, however, been called for. We do not wonder that the Tribune calls this the "Moonshine Railroad Scheme."

New Heating Apparatus.

We have several times seen in our exchanges reference to an invention, by means of which, in the language of one of them, "the flame of an ordinary gas burner may be made to give off any desired amount of heat." Our readers will scarcely need to be told that this is an unmitigated humbug. No means whatever can be adopted that will cause the flame of an ordinary gas burner to give off a degree of heat sufficient to warm a room of ordinary size on a cold evening, still less to drive a steam engine. Perhaps, however, at second thought, the plan might do to propel a "caloric engine."

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[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING NOVEMBER 22, 1853.

JOINTING AND RIVETTING METALLIC PLATES—By Wm. Beschke, of Alexandria, Va.: I claim the method of equally dividing the weakness resulting from the joining of iron, steel, or any other metallic plates, and is effected by putting said plates together so as to break joint at the ends, and rivetting over these another similar set of plates, so as to break joint at the sides and ends with the first, thus entirely covering the joints of the first, the rivets over the surface being equi-distant from each other, and from those confining the edges.

BODY BRACES.—By G. S. Browne, M. D., of Hartford, Conn.: I claim uniting the shoulder and abdominal brace, by pliable springs, so arranged and constructed that they shall be confined on each side of the spine to the abdominal brace, and when fastened at one end, permit a limited vibration, and when fastened to the other end, be rigid, as described, whereby the same brace can be adapted to a variety of patients in different stages of disease, or to different stages of disease in the same patient.

NUT MACHINES—Henry Carter & James Rees, of Pittsburg, Pa. Ante-dated June 3, 1853: We claim the arrangement of the devices, as described, for reducing the end of the blank bar to a given thickness, preparatory to severing the blank, whereby nuts of uniform thickness are produced from bars of irregular thickness and the machine is protected against injurious strains.

TRANSPORTING BRIDGES—By Thomas & Samuel Champion, of Washington, D. C. Ante-dated May 22, 1853:—We claim building bridges on shore, on a level, or thereabouts, with their resting places on the abutments, and then setting them in place by moving them into position, as set forth.

VENTILATING RAILROAD CARS—By S. A. Clemens, of Springfield, Mass.: I do not claim the covering planes for gathering and condensing a current of air, nor a mode of filtering air by causing it to press through a porous or fibrous substance or material, which is in a dry state, or unprovided with arrangements for securing a continual supply of moisture to replace that which is evaporated by the air passing through it: nor the arthe arrangement for blowing the sparks outwards through a narrow opening in the back of the ventilator.

I claim the mode of ventilating railroad cars, etc., by causing the air to pass through sponge or other suitable porous or fibrous substance or material, said material being provided with means for a continual supply of water to moisten it and replace that which is evaporated by the air which passes through, as set forth.

LOOMS—By O. A. Kelly, of Woonsocket, R. I.: I claim first, the arrangement of levers connected by a spring or elastic connecting rod, in combination with the tappet wheel, whereby the shuttle boxes are raised and lowered by a yielding mechanism, which diminishes greatly the liability to breakage, as specified.

Second, the method of balancing the shuttle boxes on the lay, in combination with mechanism for simultaneously raising one set and depressing the other, as specified.

Third, the reciprocating and rotating pattern cylinder, in combination with the vibrating lever or the equivalent thereof, for the purpose of rendering the intervals between the changes of the shuttles regular or irregular, as set forth.

Fourth, the rack cylinder or equivalent, in combination with the two pinions and the mechanism for throwing them alternately into or out of gear, or the equivalent, whereby the racks are moved in alternately opposite directions, with a variable range of motion, as required, for operating the pattern cylinder.

Fifth, a series of pins, or their equivalent, on the inner end of the rows of holes in the pattern cylinder, a disc having a corresponding number of pins or teeth on its periphery placed loosely on the axis of the rack cylinder and the pawls which turn the disc and pins, in combination with the rack cylinder, whereby the latter is turned at each extreme of its vibration, so as to throw one pinion out of gear with the racks and the other in, to reverse the motion.

Sixth, the method of uniting the pattern cylinder, or its equivalent, by a yielding or slip coupling operating as specified, whereby the danger of breaking the mechanism when it happens to become deranged, is greatly lessened.

Seventh, the method of working the same row of holes in the pattern cylinder to the right and left in succession, in case the cylinder should not have holes enough to work the ornamental design in the cloth by working the holes once only, whereby a cylinder of a given size will be capable of producing a much more elaborate design or larger figure than if the holes could be used but once in the production of the same figure.

WATER WHEEL—By Frederick Smith, of Pontiac, N.Y. I claim ventilating water wheels enclosed by a curb, scroll, or box by means of a tube communicating with the wheel, or in any other manner substantially the same, in combination with the buckets, constructed and arranged, as set forth.

CUTTING SCREWS ON BEDSTEAD RAILS—By James R. Kane, of Tiffin City, Ohio: I claim the combination of the spiral-faced plates, with the arms and spring, for securing the rail in the machine, as specified.

I further claim the catch, in combination with the notched, tie, and pins, as specified, for carrying the right and left nuts against the screw and securing them in position, as set forth.

BOXES FOR SUPPLYING BUSINESS CARDS—By Wm. Lewis & W. H. Lewis, of New York City: We claim the lip on the slide, combined with the gate, to draw out one card at a time, as specified.

PLATFORM SCALES—S. T. McDougall, of New York City: I claim the arrangement of the triangular lever and the two independent side levers, having their long arms suspended from knife edges attached to said lever, whereby the final adjustment necessary to make the scale give the same weight on all parts of the platform, may be made by moving the bar only, which carries the two last named knife edges, without the necessity of any precise adjustment of the two knife edges upon the levers, to equal distances from the fulcra of those two levers.

CUTTING SCREWS ON BEDSTEAD RAILS, &C—By J. Parsons Owen, of Norwalk, Ohio: I claim supporting the mandrel in the oscillating frame, as described, which in combination with the lever and wedge, permits either mandrel to be brought effectively into operation for cutting, as set forth.

I also claim the eccentric grooves of the cam, in combination with the bars, as set forth.

CUTTERS OF GRAIN AND GRASS HARVESTERS—By W. Pierpont, of Salem, N. J.: I claim hanging the cutter blade at each end to a crank, so as to cause the rotary draw cut in form of a circle, as described, in combination with the counter rod, for insuring the perfect revolution of both shafts in unison,

REVOLVING FIRE-ARMS—By M. L. Rood, of Marshall, Mich.: I do not claim the revolving cylinder, nor the crank, rock shaft, tightening cam, tumbler, stirrup, revolving lever, or spiral spring, nor the ratchet teeth, nor the cylinder groove on the end of the cylinder, nor the adjusting spring or the guards, or their equivalents, they having been before used. Nor do I claim a slotted arm, as merely connecting the hammer with the crank; nor do I claim the smoke guards.

But I claim the peculiar arrangement in fire-arms described, by which the guide pin, in connection with the stop notches, adjusting spring, and the hook connection between the smoke guards and rock shaft, causes a more perfect joint, and more sure connection between the cylinder and barrel, thus preventing all leakage, keeping the cylinder and its attachments clean, and protecting the surrounding charges from taking fire.

I also claim the arrangement of the slotted arm and the hammer, by means of which the gun may be cocked with or without moving the cylinder.

BLASTING POWDER—By Wm. Silver, Jr., of Pittston-Pa.: I claim the blasting powder, as set forth, the same consisting in an unglazed powder, composed of charcoal, nitre, and sulphur, in the proportions specified, prepared and treated with chlorate of potash, according to the direction, as set forth.

I do not claim the use of chlorate of potash as a means of preventing smoke in mine-blasting, except when combined with charcoal, sulphur, and nitre, as set forth.

[This is a very valuable invention, and has been secured in foreign countries through the Scientific American Patent Agency.]

CUTTING SCREWS ON BEDSTEAD RAILS, &C—By Hiram Smith, of Norwalk, O.: I claim, first, the formation V cutters, as described, in sections of the cutter heads, which are secured by means of screw bolts, substantially as set forth.

Second, securing the section of cutter head containing the post V cutter, by means of a polygonal headed bolt passing, as described, through the hollow spindle, cutter head, and section base, which arrangement, in addition to securely holding the V cutter, admits of the adjustment of the cutter, as described, for ensuring the formation of tight joints between the post and rail.

Third, the method described of attaching the tenon socket to the spindle.

Fourth, the arrangement of the standards and clamp upon the blocks, by which the machine is secured to the post and raise, and the operation of cutting facilitated, as set forth.

FACING ENDS OF PERCUSSION CAPS—By Dr. Jos. Goldmark, of New York City: I claim, in combination with the holding plate, as specified, the employment of the guide plate, as specified, to facilitate the insertion of the caps into the holes of the holding plate, as set forth.

I also claim in combination, as specified, the employment of the plate with the series of punches or pins, as specified, for the purpose of forcing all the caps to the required depth in the holding plate.

SHINGLE MACHINE—By E. R. Morrison, of Troy, Pa.: I claim the combination of a reciprocating river and finishing knife, with a fixed knife, so that on the backward motion of the river, one face of the shingle shall be dressed, and by its next forward motion, the second face will be dressed by the fixed knife, substantially as described.

PLATFORM SCALES—By Elnathan Sampson, of Cornish, N. H.: I claim the combination of the sliding bars, with the platform, the actuating levers, and the scale beam, in such a manner as to enable the platform to be laterally expanded or contracted, as set forth.

BANK LOCKS—By J. H. Crygier, of New York City: I do not claim the slotted discs, nor the index plate, nor the manner of adjuting the slotted discs, so that the slots in the discs may be placed inclined with the ledges in the bolt for circular plates, having letters or characters upon them, arranged with an index plate, have been previously used: neither do I claim the lever guards irrespective of the arrangement described.

But I claim, first, the empleyment or use of the lever guards, constructed as shown, and arranged so as to operate against the discs, and prevent them from turning, as the bolt tumbler is raised, as described.

Second, I claim connecting the ratchets to the circular toothed discs by means of pawls, and operating said pawls by means of the tumbler or its equivalent, whereby the ratchets may be connected and disconnected from the several discs simultaneously, and the changes effected with the greatest facility.

[A notice of this ingenious invention is published in No. 11, this Vol. Sci. Am.

LIFE BOAT—By L. F. Frazee, of New Brunswick, N. J.: I am aware that bags of textile material, filled with cork or varnished rushes, or their equivalents, are not new as floats, neither are rafts made of such balsas a new device, neither is it new to put the bottom of a boat half way between the bottom of the sides and the top thereof, as that feature is well described as applied to a life raft, in an early volume of the Transactions of the Society of Arts, and its application to a metallic boat has been lately patented—all these points I know to be old, and I claim none of them, simply.

But I claim the combination of the balsas, shaped and arranged with respect to each other as described, with the frame which keeps them in shape and position, and is itself protected by the balsas, said frame being constructed as described, and the whole constituting a life float having the qualities set forth.

GRASS HARVESTERS—By Wm. H. Hall, of Phillippi, Va. I claim the tram in combination with the staples on the arms, as described.

SELF-ACTNG PRESSES—By S. R. Holt, of Worthington, Ohio: I do not claim, in general, the device of making the weight of the article pressed act as the pressing power by making the press itself rise and fall on the system of levers or other mechanical powers.

But I claim so arranging the lever, and providing it with a self-adjusting follower in combination with the lever and the bed plate, with its supporting frame, that the motion of the article pressed may be transmitted to the long end of the lever, at or near the fixed center of motion of the frame, causing the weight of the press and article to be pressed, to exert power on the follower, and thereby gradually press the article into a more compact and solid form, the power being increased when the weight of the article is not sufficient, by means of the pinion and rack bar which receive motion from a driving shaft, the whole being constructed, arranged, and operating as set forth.

[See notice of this invention in No. 6, this Vol.]

MACHINES FOR DRESSING MILLSTONES—By W. B. Cummings, of Tyngsborough, Mass., and N. P. Dadman, of Chelmsford, Mass., and C. A. Blood of North Chelmford, Mass.: We claim the combination of the pedestal, the head piece, and the cam, constructed and operating as set forth.

RE-ISSUE.

OIL PRESSES—By D. L. Latourette, of St. Louis, Mo. Patented originally Oct 28, 1851: I claim, first, the pipes sliding into and out of stuffing boxes, in combination with the pressing plates, as set forth.

Second, I claim, in combination with the pressing plates, the complete boxes or cases formed on the surface of the plates, as shown, where the openings to the said boxes or case, for the entrance or exit of the substance to be pressed, are closed with the doors and caps, as set forth, the caps sliding over, and thus securing the doors when the press is brought into action. This combination when used in connection with a horizontal press, enables me to communicate and press the substance and discharge the refuse or cake without the use of bags or mats, and without handling, and at the same time to secure a perfect and free discharge of oil from the entire surface of the cake, through the metallic filterers and vertical channels. I do not claim the arrangement in a horizontal press of a series of pressing plates between which the substance is inserted, having been previously enveloped in strong cloths or mats; nor do I claim the arrangement in a vertical press of a series of partial cases, into which the substauce is inserted, having been previously enveloped in strong cloths or mats, which in both of these instances are necessary to convey the substance into the press, and to prevent it from pressing out latterly from between the plates in the one instance, and out at the end, and through the crack in the other.

[This valuable invention was illustrated in Vol. 7, and has been secured by Patent in Great Britain through the Scientific American Patent Agency.]

ATTACHING VITRIFIABLE MATTER TO METAL—By T. G. Clinton (assignee of Joshua Laird, now deceased) of Cincinnati, Ohio: patented originally May 22, 1849: What is claimed is attaching mineral vitrifiable matter to metal by inserting a metallic tubular shank, involving the characteristics of thinness, yet stiffness enough to resist lateral strain, elasticity, and centervent, into the mineral vitrified matter, as described, so that the quantity of metal in proportion to the bulk of mineral admissible in the case being thus very small, the vitrified mineral enjoys the capacity to embrace and attach itself to the metal without any strain in or upon itself during its crystallization the difference between the expansibility and contractibility of the metal and the mineral, the one to the other being also reduced below any practically injurious degree, that is to say, the glass being just as strong with as without such a shank.

The Tonnage Laws of Ships.

The following important letter from J. W. Griffiths—the well-known nautical architect and author—to the Secretary of the Treasury, has been furnished by the author for the "Scientific American," and we request for it the special attention of our people.

TO THE HON. JAMES GUTHRIE,

Secretary of the Treasury, Washington, D.C.

Your letter of inquiry, in relation to the revenue laws, as applied to the admeasurement of vessels, has been the subject of a very considerable amount of reflection. I have examined not only the present law of the United States, but that of England France, Prussia, and other European Governments, and can arrive at no other conclusion than this, that there should be an "International Tonnage Law," and I would respectfully add, that in my judgment such a law (if based on equitable principles) would do more to foster commercial enterprise than all the protective laws that have ever been enacted. It is impossible to frame a law, that recognizes the dimensions of a vessel in feet and inches that will not be subject to infraction. For example, if the length of vessels are to be measured at a definite locality, they very soon become contracted at that locality and are expanded in other parts to make up the deficiency; the same may be said of breadth, and so also of the depth—if the breadth is to be measured at the load water line or above water, vessels then soon become narrower at those points than they are below water, and when the depth or height of all the covered decks are to be measured at certain localities, the upper deck at those points will be left open, to be covered when convenient with gratings. The present tonnage law of the United States and of Russia (for they are alike) have been the means of trammelling the genius of the country beyond the power of conception, from the single reason (if there were no other) that those laws recognize the dimensions of vessels only, whereas the law should measure the bulk regardless of the dimensions. The results of the passage of such law would be that modelling would be left entirely free—the ship owner might select such dimensions as the ship builder would propose, as being best adapted to the bulk of the vessel, without fear of his being warped in judgment by his own immediate interest. The merchant, the mechanic, and the government would be placed on equal terms. The size of the vessel would be most accurately determined by the cavity made by the floating vessel, if decks were added, whether at the time of building or at any subsequent period, the increased number of cubic feet of water displaced, would determine the additional advantage to be derived. The water into which the vessel was launched would serve as a hydrostatic balance to determine both the bulk and weight of the vessel. The process of computation being simple, all parties connected with commercial operations, and having an ordinary stock of knowledge in the rudiments of arithmetic, could determine the tonnage of a vessel at any given line of flotation. In order that this manner of computing the displacement or weight of a vessel may appear quite clear, we will assume that from the model of a ship we find the displacement or the number of cubic feet of water displaced at every parallel line of flotation equally spaced three inches apart from the keel to gunwale, this should be done while the vessel is building and registered; immediately after the vessel is launched, and as soon as her appurtenances are on board, the line of flotation is ascertained, and the number of cubic feet of water displaced below this line, is the weight of the vessel, this weight deducted from that shown at any subsequent line of flotation, will leave a remainder equal to the actual tonnage at its corresponding line of flotation—this tonnage is the actual weight of the cargo, or whatever else may have been placed on board subsequent to the determination of the weight of the vessel itself.

A single example will serve to make the matter quite clear: suppose a ship to displace 1000 tons or 35,000 cubic feet of water at her launching line of flotation, and that she gains 50 tons or 1750 cubic feet of displacement for every three inches above that launching line,—we will again suppose that she is loaded 8 feet above the launching line, which would equal 32 of the 3 inch spaces, we then have $32 \times 50 = 1600$ tons as the burthen of the vessel, her total displacement being 2600 tons and 1000 tons deducted for the weight of the hull. If the vessel should be loaded deeper, the tonnage would of coarse be increased, and this rule of displacement will apply universally to vessels of every form and of every size. If it should be thought best to make allowance for the engines of steam vessels, the weight might readily be determined in the same manner, and the deduction registered. It may be well to remark that 35 cubic feet of salt water are equal to one ton, this would cover such freight as is called dead weight, for lighter goods 40 should be the divisor, inasmuch as 40 cubic feet of measurement goods are only equal to one ton of displacement. This tonnage admeasurement, it will be perceived recognizes the weight or bulk of the cargo, and has no further connection with the vessel than to use her as a pair of scales or a measure to weigh or determine the bulk of the cargo, if she is but half full the merchant pays dues on only half, or what she has on board; if she is overloaded, he pays dues on the increased amount.

I have recently received a letter with a copy of Mr. Moorcani's book upon this subject, from London,—this gentleman was a member of the committee appointed by the British Parliament to investigate and report, and will do so at its coming session. You will perceive that he advocates a much more complex mode of measurement, and one which will be subject to infraction, consequent upon measuring the dimensions of the vessel. With the highest consideration I have the honor to be your obedient servant. JOHN W. GRIFFITH.

New York, Oct. 27, 1853.

Property in Inventions.

Colonel Vergnaud, of the French Artillery, some time since memorialized the Minister of War for a grant of money by way of reward for certain inventions by him of the application of fulminating mercury to the priming of guns. The Minister rejected his application, on the ground that in reality these applications were known before; but in doing so enunciated the following somewhat startling doctrine:—That an officer in the army devotes himself entirely to the service of his country, and that the produce of his labors and of his genius belong solely to it; and that if he needs any other recompense than that which is to be found in his conscience, and the performance of his duties, the approbation of his commander, and the satisfaction of the Minister of the Department, ought to be all-sufficient. Upon this Colonel Vergnaud again memorialized the Minister, pointing out that in making his claim he was doing nothing more than had been previously done by others in the service, who had had their claims admitted, and rewards in money granted. He did not admit the doctrine, that an officer entering the army devoted all the produce of his labors of mind and body to the State, alleging that such a doctrine was a variance with moral and intellectual progress—the aim of all society; for it took away from individuals the hope of reward. He characterizes the doctrine as unworthy the enlightenment of the times, and fitted only for the days of Louis XIV.

United States Engineers.

It is announced in the "Washington Star" that an examination of candidates for admission into the corps of United States Engineers, and for promotion into that corps, is to take place at the Washington Navy Yard, commencing on the 5th—Monday next. The board is to consist of Engineer-in-Chief Martin, and Chief Engineers Wood and Hunt. Any engineer in civil life who desires to enter the service, on applying to the Department, will probably receive a permit to be examined, on the presentation of which to the board at the time and place specified above, he will be duly examined.

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New Inventions.

Improved Car Register.

G. M. Ramsey, of New York City, has invented an improvement in city rail car and omnibus registers for showing the number of passengers which have rode in them during the day. The nature of the invention consists in providing public vehicles with a hollow closed spring step, which has a vertical slide for conveying shot attached to its top in combination with an inner chamber, which is provided with an inclined shot hopper, through which the slide works, the said slide being so constructed that it receives but one shot from the hopper at a time, and conveys it into the inner chamber the moment the weight of the passenger comes upon the step, and then springs back into its place as soon as the weight of the passenger is withdrawn. Double the number of passengers will be indicated if they pass out and in at the same door. The inner shot box is locked, and the key held by the proprietor. The inventor has applied for a patent.

Extension Carriage Top.

G. W. Bachman of Clifton Springs, N. Y. has invented and applied for a patent upon an improved carriage top, by means of which the tops of carriages can be extended farther over the front of the carriage, and thus afford more perfect protection against the weather than those in ordinary use. This is effected by means of an additional bow in front of those commonly used, with a joint nearits lower ends, by means of which it can be folded back when persons are getting in, and in pleasant weather, but can be thrown forward in a storm, so as completely to inclose the top and sides of the carriage. This may be done, or the whole top folded back, without reaching the arms outside, as the joints and braces are arranged differently from those in common use. We like it better than any other folding carriage top we have seen.

Lever Press.

Elias Davis, of Montpelier, Vt., has applied for a patent on an improved self-acting press, the novelty of which consists in so arranging a series of horizontal and vertical knuckle joint levers below the screw and bed plate, in combination with the peculiar manner of constructing and operating the press that a progressive upward pressure will be exerted upon the article being pressed by its own gravity, and the gravity of the movable portion of the press, and also in combining said levers with the screw in such a manner that when a very elastic substance is being pressed, and the main levers have exerted their full power upon it, a further pressure may be communicated to it by elevating the bed plate.

Wiring Blind Rods.

Benjamin B. Hill, of Bridgeport, Conn., has invented an ingenious machine for wiring the rods used in making Venetian blinds. The invention consists in the combination of a forming die and punch, so arranged as to form the wire staples and force them into the blind rod, and in the employment of a cutter die arranged so as to cut the wire of which the staples are formed into blanks of the required lengths. The blanks are flattened, so as to enter the wood easily by the operation of the same tool which cuts them. We have seen this machine in operation, and can speak highly of it. It is strongly constructed, and we should not think it liable to get out of order.

Spark Arrester.

Joseph A. Arnold, of Richmond, Va., has invented an improvement in the French & Beard spark arresters, which consists in arranging a series of curved vanes on and around the under surface of a trumpet-shaped deflector, instead of placing them on a vertical stem of the deflector, whereby a longer draft or steam pipe can be employed, and thus a more perfect draft secured. The sparks are also revolved at the moment of deflection, and are thus more readily forced through the perforated chamber. The inventor has applied for a patent.

Taper Auger for Boring Hubs.

Billings Landphere, of Unadilla Forks, N. Y., has invented an improved implement for boring hubs, the improvement in which consists in a peculiar manner or securing the screw-rod, to which the cutter is attached in the proper position in the hub. This is effected by means of rings or collars, one of which is secured by set screws to the front, and the other to the back end of the hub. The front collar is provided with a movable nut, through which the screw-rod works, and the back collar has a circular plate, which turns in it, said plate having an oblong slot for the rod to slide in, and in which it can be secured at any desired position. The cutter is also of peculiar construction.

Potato Prize.

The Society of Industry in France has offered a prize of 1000 francs for the best treatise on the potato; the "New York Tribune" says that the best way to improve the potato is to let the 500,000 soldiers and government sailors who do nothing but waste money, time and powder, go to digging the soil.

SELF-WAITING DINING TABLE.

Figure 1.

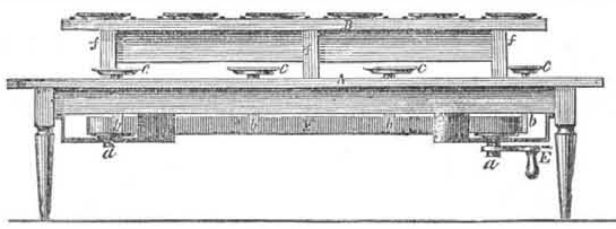
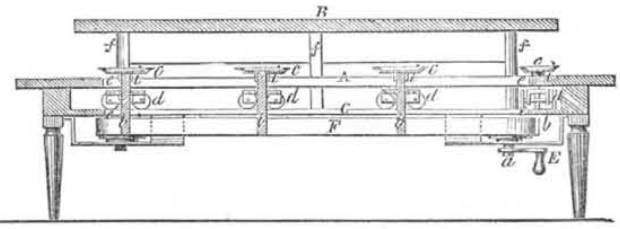


Figure 2.



L. Pusey, of Patterson, Pa., has invented and patented a self-waiting Dining Table, the novelty of which consists in constructing it with an endless band, F, situated beneath the table, and kept in constant motion during meals by any power applied at the crank, E, to which band is firmly attached, at convenient distances, the guiding carriers, *b b*, which pass through and are supported by small railway tracks, *d d*, moving in guiding apertures, *e e*, in the top of the table. Upon the tops of these carriers are placed waiters, *c c*, which are constantly passing around the table. An additional shelf, B, is placed over the center of the table by the standards, *f f*, for holding such dishes as do not require to be constantly passed about.

This table is intended principally for hotels and boarding houses. It is in form like an ordinary table, in the top of which, A, at a proper distance from each side, is cut a narrow aperture of uniform width, extending nearly from end to end, and semicircularly around the ends of the table. The band, F plays around upright shafts, *a a*, and as before stated, keeps the waiters in motion.

Fig. 2 is a sectional view of the table, exhibiting these different arrangements. The same letters refer to like parts as in figure 1.

The inventor also proposes to pass pipes around the edge of the table, for supplying the guests with coffee, water, &c., these may, if desirable, be kept hot by any available means. We should think this quite convenient, especially in those hotels where a man is under the necessity of helping himself, or going unserved, as is too often the case with the hungry traveller.

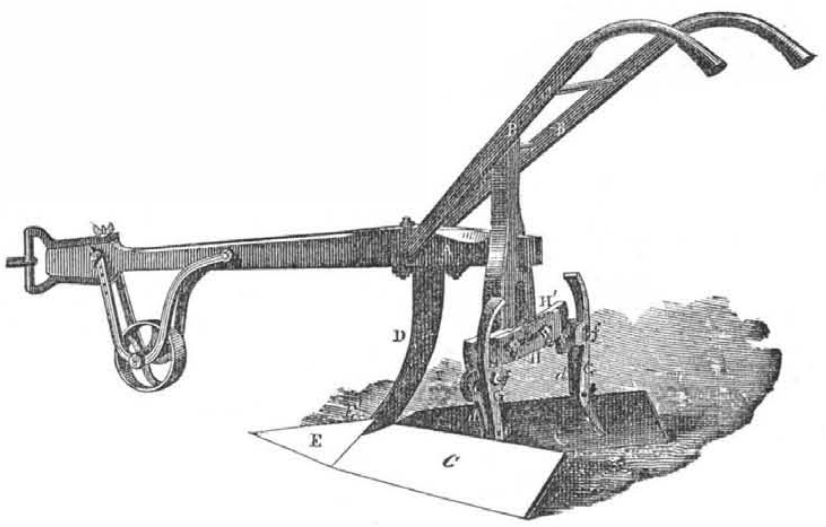
For further information address the inventor, Juniata Co., Pa.

IMPROVED CULTIVATOR PLOW.

The annexed engraving is a perspective view of an improved Cultivator, invented by L. M. Whitman, of Weedsport, N. Y., which was patented Oct. 11, of the present year.

The nature of the invention consists in a novel mode of setting the inclined blades and in constructing the share and the lower part of the main standard, together with the front end of the adjustable blades, in such a manner that they can all be held together, and in their places by one bolt, and the said bolt, at the same time be made to serve as a center for the blades to turn upon, as they are adjusted by the standards attached to their hind ends.

A represents the beam; B B the handles; C C the adjustable blades or mould-boards, which may be set very steep to throw the soil up against the hills, or less steep to allow it to pass over them and fall in the open space at the center. The front ends of these blades lap over each other, and are so shaped that they lay snugly on the lower part of the standard, D, and



the front ends of the inclined blades being united by a bolt at E′, which passes through them and the share, E. On this bolt the blades are allowed to swing freely.

To the back ends of these blades are firmly attached levers, G G, by which the blades are adjusted. These levers carry the fulcrum pins, *c c*, which connect them with the vertical standards, *d d*, of the notched adjustable cross-bars, H H′, which serve to move the blades further apart or nearer together. Through the vertical standards, *d d*, are cut circular slots, *e e*, in which the set screws, *f f*, work freely to alter the inclination of the blades. Notches are cut in the back of the standards, which are held by the set screws firmly against a cog on the front of each lever. This plow we should think worthy the attention of farmers and manufacturers.

For further information address S. G. Wise, assignee, Weedsport, Cayuga Co., N. Y.

Improved Furnace.

Daniel Willis, of New York City, has applied for a patent on an improved heating apparatus for cooking purposes or warming rooms, which consists in making the fire chambers in sections and providing each section with a broad horizontal flange which serves for keeping them in place, and as supports for them and also for radiating surfaces. There are also several minor improvements.

Draw Head and Buffer.

David A. Hopkins, of Elmira, N. Y., has applied for a patent upon an improved draw head and buffer, which is so constructed as effectually to resist any percussive force, and at the same time present a yielding resistance to an opposing car, thus preventing the shocks so common at the starting and stopping of trains. The block is of peculiar form for holding the link in either a horizontal or inclined position.

Coal in Abundance.

Here is a paragraph from the Fairmount Virginian. "It would astonish people who pay twenty cents a bushel for coal, to see that article dug out of our streets in grading them. Such was the case last week. In grading the street leading to the bridge, Mr. Martin, the contractor, struck a vein, from which he allowed persons to dig and haul away what they wanted, at the rate of 1½ cents per bushel." Wish they would do so here.

Shaving by Machinery---Queer Invention.

William Johnson, of North Shields, joiner, has invented a shaving-machine. This machine is of singular construction, and contains every qualification necessary for the process.—In appearance it is not unlike an old-fashioned arm-chair. But the most unique feature in the whole affair is the arrangement of the razor blades, which are fixed longitudinally on cylinders, from three to six inches in length, four on each cylinder, at an angle of sixty degrees, with fine camel-hair brushes between; for you are lathered and shaved at one and the same time, the lather being slipped from the interior of the cylinders, which are hollow. The machine is put in motion by the weight of the patient, the seat gradually giving way beneath, and sinking with him until he reaches the ground, when the operation is completed. The seat, rising as soon as it is released from his weight, is ready to commence again without any preparation. A musical box, of Mr. Johnson's construction, and capable of performing a great variety of airs, is appended to the machine, and can be attached or detached according to the pleasure of the person undergoing the operation, so that you may be shaved to any tune you please! Experiments, (says the "Gateshead Observer,") have been tried and found satisfactory.

[This invention will certainly remove the objection made by those who wear long beards, as it relates to shaving and time. All that the long beards have to do is to sit down and off goes the hair like a wool picker. This machine comes of the Yankees visiting England in 1851; the hint was no doubt derived from a flock cutter, and Miniss' self-walking and running chair.

Safety Ropes for Buildings on Fire.

A correspondent recommends the shooting of a rope by bow and arrow over buildings on fire, for the purpose of drawing up ladders, or for drawing up another rope with an *eye* on it, to take off persons, who may ascend to the roof, or who may in high buildings be cut off from coming down by fire below, when no ladder can reach them. The *fire safes* which are used in London are effectual remedies for such cases. They can be erected from the street in a few seconds, to reach the tops of the loftiest buildings, and we wonder our fire companies have never adopted them here.

Imponderable Agents.

The articles which have appeared in this volume of the "Scientific American" on the above subjects, contributed by C. W. S., will be carefully reviewed by us in future numbers, commencing two weeks from the present date.

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Scientific American.

NEW YORK, DECEMBER 3, 1853.

Bandying about Inventions.

Interested and selfish parties have done, and are now doing, an immense amount of mischief by dragging their business quarrels before the public, in the form of crimination and recrimination respecting the pirating and use of certain inventions and discoveries. In an article published by us recently, on page 21, we alluded to the cards which had appeared in certain papers relating to sewing machines; but such machines are as nothing in comparison with that great monster of newspaper card controversy, "Vulcanized India Rubber." As sulphur is the principle ingredient, and heat the agent in effecting *vulcanizing* changes in this material, it also appears as if a spirit from the hot-brimstone den of old Satan himself were infused throughout everything connected with its manufacture and management.

On page 45 we published a description of J. Rider's process, as described in his patent, for the preparation and manufacture of fabrics from "gutta percha," which goods resemble and equal those heretofore made from india rubber. With the inventor we never had any acquaintance, or conversation; we presented the subject and much useful information in connection with it, as something new and important to our readers in the field of inventive progress. The discovery of a method of preparing gutta percha —this new and singular oriental product— whereby it can be so treated as to make excellent and peculiar fabrics, we considered—as we now do—a very valuable addition to the manufacturing interests of our country. Our implied opinion, in the article referred to, was, "that *gutta percha*, chemically, is not an analogue of caoutchouc;" this opinion, however, was not broadly stated. Since that period some of the daily papers, in our city, have actually groaned, day after day, with long paid articles on the subject. In all of these inflictive documents on the one side, W. Judson, attorney for Charles Goodyear, charges J. Rider with infringing the "vulcanizing india rubber patent," by asserting that gutta percha is analogous to caoutchouc, and that the process for manufacturing the former substance is embraced in the patent of Goodyear. The cards of the Goodyear side of the question are couched in terms of an exceedingly *sulphurous* character; and to these Rider has replied in language not less *sulphuric*. On paper, these two gentlemen exhibi an appearance like that of the famous Kilkenny cats: they have worried one another until nothing is left but their vertebral appendages. No patentee has any moral right to act as the attacking party in this case has done. If that party honestly believes that others are infringing his patent, no one knows better than the author of those furious newspaper articles, that the only way of obtaining redress is from our courts of justice—and that way is broad and open before him. Nay, we go further than this; we assert, that the lawyer of a patentee, who does not promptly seek proper redress for his client, through the proper channel, does not do his duty to his own profession, or the interests of his client. We cannot but censure the conduct of any lawyer who, instead of enforcing the rights of his client, and seeking redress before the proper tribunals, inflicts the public ear with *ex parte* statements and one-sided arguments. By such conduct, and the frequent use of the words "*invention* and *infringing the patent*," in the articles published, the public, who know nothing about the real causes, or the merits of the controversy, are led to believe that the spirit of the bottomless pit is not only part and parcel of these sulphuretted patents, but other patents also. The very idea of a patentee, or the lawyer of a patentee, failing to seek redress promptly for his asserted wrongs, by the only legal means whereby redress can be obtained, and instead thereof, paying large sums of money for abusive newspaper articles, ories, with it a conviction that there is something morally wrong about the matter. The best and the quickest way to settle such disputes, is to submit them to a jury of twelve intelligent American citizens. We do not want the public ear continually inflicted with quarrels about "patents new and patents old," when at the bottom of all, neither inventions nor patents, but certain manufacturer's interests, are the sole and ruling motives for strife. To those patent lawyers engaged in this controversy, we must apply a parodised couplet of old Hudibras,

"The lawyer drum of gum-elastic
They beat with pen instead of *a* stick."

To the public let us say, "heed not the cards published in our daily papers about patent quarrels: the authors of them have specific objects in view, best known to themselves; they know how and where to obtain redress, and their complaints deserve the censure and condemnation of all *honest* patentees."

Patent Office Report for 1852---No. 6.

Examiner Lane—It will be remembered by our readers that we published illustrations of an improvement in glass lenses for signal lights, &c., on pages 273 and 274, Vol. 8. This improvement consists in moulding dioptric lenses in one piece, instead of making them of a number of separate concentric rings connected together. The Report speaks favorably of this improvement. The object of such lenses is to throw the rays of light in parallel lines, thus rendering them visible at a great distance; an invention, as applied to lighthouses, for which we are indebted to Fresnel, the celebrated French optician. These lenses are on exhibition at the Crystal Palace. A patent was granted for a novel method of frosting the surface of glass plates, by placing a plate of glass flat in the bottom of a box made to rock like a cradle, and then covering it with sand, pebbles, and water. The rocking motion causes the sand and pebbles to slide over the surface of the glass, from one side to the other, and thus produce that fine abrasion which gives its surface a frosted appearance; the glass may receive the motion instead of the sand, and the same effects be produced. The two patents for improvements in tanning—Eaton's and Kennedy's—the one embracing the use of the sulphate of potash, and the other that of borax, both of which have been published in our columns (Vol. 8) are noticed. The Examiner considers the applications for patents, for tanning operations, as "exceedingly perplexing." The double back railroad seat and sofa, illustrated on page 356, Vol. 7, is favorably noticed—likewise a few other car seats, for which patents were granted. Examiner Lane's Report is indeed a good one.

Examiner Baldwin.—This gentleman was appointed successor to Dr. Page, who resigned his office. He has charge of four classes of inventions, embracing, first, stoves, lamps, ventilators, &c.; second, the fine arts—embracing painting, sculpture, engraving, printing, binding, and jewelry; third, medicine, surgery, and dentistry; fourth, designs. "The whole number of examinations," says the Report, "during the year was 796, of which 223 were patented, including 106 designs; and 249 were rejected, including 20 designs. The new applications referred to me during the year were 402, including 126 designs, of which 54 cases remain unexamined." (From these figures we have not been able to form a correct estimate of the number of applications passed and the number rejected.) One of the patents granted was for a camphene lamp, surrounding the wick of which was a chamber filled with water, for the purpose of extinguishing the light, if by any accident the lamp should fall or get upset. One improvement on railroad lamps, for which a patent was issued, consisted in having a body of water kept in contact with the back of the reflector to prevent it from becoming unduly heated. A patent was granted for a very useful improvement on the blow-pipe, which renders it very useful to the dentist and jeweller: it can be used with gas or made to receive its supply of air for the common lamp from a bellows; it is arranged in such a manner that while held in the one hand, the flame can be directed upon any point desired, by a movement of the thumb.

The extent and importance of the pianoforte trade is stated to be of the value of $2,100,000 in 1852, and the number of instruments made 9000. The fabrication of them is stated to give employment to 1900 persons, whose aggregate wages are $72,000 per month. This estimate, we are positive, is too low. A patent for a printing telegraph is briefly described, which is called "the most interesting invention that has come under his examination." To us it resembles the House Telegraph, which was patented a number of years ago, and with which all our readers are familiar. "Of the several applications made for patents on medicines during the year, not one was granted;" but a patent was granted on a machine for making medicines for the million, which deserves notice. *Physic* is fed in at one side, between two cylinders, having hemispherical recesses that match with each other, and on the other side it comes out in pills by the box full. The medicine trade has not been a barren one for inventors, as in connection with this pill making machine, another patent has been granted for administering *physic*—a clapper spoon—and a very useful invention it is, especially for feeding some kinds of medicine to children.

This Report concludes with an expression of surprise at the few applications which were made for patents on designs. The office has always been very liberal to this class of applications; we have no doubt, however, but such kinds of applications will yet be more numerous than they now are. Fortunes have been made by peculiar patterns of calicoes, and ornamental designs of jewelry. Our artists will yet be more wise in seeking the protection of our patent laws for their works of ornament and decoration.

Stealing Remarks---The Tribune.

We clip the following from the "Tribune" of the 21st inst.:—"The 'Scientific American,' stole our remarks on the Crystal Palace Inauguration, did them up in its own way, and now boasts of it as original. Is that scientific?"

The New York "Tribune" is an independent and talented journal—its Editors believe in calling things by their right names. Having considerable admiration for plain dealing, and not wishing to set aside the rule of honesty, especially in dealing with those who are classed among its chief champions, we take this occasion to state that the above paragraph, charging us with having stolen their article on the Crystal Palace inauguration, is *grossly false*, and we ask of the Editors, as they frequently do of those journals who misrepresent *their* views, to correct it. The ideas expressed in reference to the treatment of mechanics, as put forth in the "Tribune," and which we are now charged with having stolen, are not new to the readers of the "Scientific American," and if there is any plagiarism in the case, we are not the guilty parties. The article published in the "Scientific American" was written on the evening of the day of the inauguration,—this we recollect perfectly well; it is therefore impossible that we could have stolen the ideas from the "Tribune's" article—which did not appear until after ours was written.

The article in the "Tribune" was bold and manly,—we were glad to see it; but its appearance before the publication of our own does not establish, as a matter of course, that the ideas could not have entered other brains than the writer's—this supposition is a little too arrogant. Under the same rules of ethics, we might charge the "Tribune," with stealing the thunder of foreign journals upon the arrival of every steamer, doing it up in its own way, and then claiming it as original. We shall not measure our cotemporary by any rule against which we protest—*it is not "scientific" or gentlemanly.*

Fine Penmanship.

"A day or two since we noticed a specimen of fine writing by a gentleman in Bolivar, Tennessee, executed in the space of a quarter inch square, which had even attracted the attention and praise of so high an authority as the 'Scientific American.' We were yesterday presented with a still finer specimen of the same art, executed by J. M. Culver, of the "Memphis Commercial Academy," to which it gives us sincere pleasure to contribute our praise. Mr. Culver is well known here as an accomplished penman, but the feat which he has achieved in writing the whole of the Lord's Prayer in a space *less* than a quarter of an inch square, we confess to have surpassed our anticipations. The letters are all fully and distinctly formed, and the style of execution is as elegant as it is exact."

[The above is from the "Memphis Appeal." We have since received from Mr. McDowell, of Bolivar, Tenn., three cards, on each of which is beautifully written the whole of the "Lord's Prayer" in a circle whose diameter is one-eighth of an inch. The space contained within a circle of one-eighth of an inch, is one-quarter the area of a quarter of an inch circle; this writing is therefore four times finer than that mentioned by the "Appeal." McDowell is the champion yet in diminutive penmanship.

To find the Area of a Circle.—A very good rule for obtaining the area of a circle is to multiply half the circumference by half the diameter. A simple rule to obtain the circumference of a circle is, as 7 is to 22 so is the diameter to the circumference. Squaring the circle is yet a problem. This rule may be reduced to decimals, so as to bring out a more correct result, but for common purposes it is very useful. By these rules, then, the diameter of the circle of one-eighth is one-half of one-fourth of an inch, or as 2 is to 4; therefore $2 \times 22 \div 7 = 6$ $2\text{-}7 \div \frac{1}{2} = 3$ 1-7 area of the one-eighth diameter circle; $4 \times 22 = 88 \div 7 =$ 12 $6\text{-}7 \div \frac{1}{2} = 6$ $3\text{-}7 \times 2$ (half of four) $= 12$ 6-7, or four times 3 1-7. The result does not quadrate by 2-7 with the first problem, because the relation of each circumference accords with its diameter. The rule of this problem is found by the theorem of the triangle, which supposes the circle to be a regular polygon of an indefinite number of sides; the sum of the sides, then, will be the perimeter of the circle, consequently the radius of the circle will be the altitude, and the perimeter the base of the triangle; the area, as is well known in trigonometry being found by $A \times \frac{1}{2}B$; or, $\frac{1}{2}A \times B$; or, $\frac{1}{2}$ cir. $\times \frac{1}{2}$diam. These rules will enable any person possessing an acquaintance with common arithmetic to find out the area of any circle by measuring its diameter; such as the number of square inches area of a "piston" or cylinder. The cubic contents of the latter can be found out by multiplying the area by the height, either in inches or feet, according to the unit chosen.

The Erie Railroad.

The wide track of the New York and Erie Railroad has been completed to Jersey City, and passengers are now carried without change of cars from that place to Dunkirk, 469 miles. This road is an enduring monument to the skill of the engineers who planned and executed it, as it runs through some of the wildest portions of our State, and obstacles have been overcome which less daring minds would have deemed insurmountable. This is the longest road built and owned by any private company in the world. We shall at some future time present our readers with some statistical information concerning it.

Analysis of Rain Water.

The "*Comptes Rendus*," gives the result of an analysis of M. Martin, of 14 litres (904·434 cubic inches) of water, which fell during a violent storm at Marseilles; he did not find the least indication of the presence of iodine nor of nitric acid, which some chemists pretended to have discovered in rain water. The two ingredients, excepting pure water, which he found were the chloride of sodium or common salt and ammonia.

PRIZES!! PRIZES!!

The following Splendid Prizes will be given for the largest list of mail subscribers to the Scientific American, sent in by the first of January next:

$100 for the largest list.		$30 for the 7th largest list.	
$75 for the 2d largest list.		$25 for the 8th	ditto
$50 for the 3d	ditto	$20 for the 9th	ditto
$45 for the 4th	ditto	$15 for the 10th	ditto
$40 for the 5th	ditto	$10 for the 11th	ditto
$35 for the 6th	ditto	$5 for the 12th	ditto

The cash will be paid to the order of the successful competitors immediately after January 1st, 1854. 1

These prizes are worthy of an honorable and energetic competition, and we hope our readers will not let an opportunity so favorable pass without attention.

☞ For Terms see Prospectus on the last page.

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Linen Manufactures.—Year after year a prize was offered in vain by the American Institute for the first piece of native linen cloth, and so far as the Crystal Palace is an exhibit of this kind of manufacture, not a case of linen goods is yet to be found in the American Department. This is easily accounted for, but there would be nothing gained by entering into such a disquisition at present; we only hope that the manufacture of fine linen cloth, and other fabrics made from linen will be carried on and conducted with success in our country, before many years pass away. The "cotton manufacture" is one of the most astonishing developments of modern times; it is but a child in comparison with that of the linen, and yet, so far as quantity—the amount of goods fabricated—is concerned, the latter cannot stand any comparison with the former. We are of the opinion, however, although we have no statistical table for reference—that the linen is the most valuable trade; that is, the total value of the linen goods manufactured is greater than that of the cotton. As every manufacture connected with the history of the human race has some interesting reminiscences, that of linen being one of the most ancient, a brief review of its rise and progress will no doubt afford pleasure, and also a considerable amount of information to many of our readers, especially as some modern inventions and discoveries relating to it, have produced changes in some nations, which deserve the name of "social revolutions." The Israelites were no doubt well acquainted with linen, and so were the Persians, and some other oriental nations, but at the same time, it cannot be questioned, but that cotton was also known to the old nations, and this fabric may often receive the name of "linen" in the Bible. Be that as it may, we find that the manufacture of linen goods had arisen to great importance in Europe during the middle ages. Flanders was the focus of the trade, and it is recorded that in one single city—that of Ghent—there were no less than 30,000 hand loom linen weavers in the early part of the fifteenth century. The cities of Bruges, Ghent, Brussels, Antwerp, and some others in the low countries of Europe, were nothing but manufacturing corporations—republics in name and fact—and when banded together they could bring 40,000 hand-loom weavers into battle against the chivalry of Burgundy. Brussels was the most distinguished city for the linen manufacture, especially lace and embroidered work, and at the present day it still bears a high character for such goods. In the Crystal Palace we have discovered only one case of very fine linens from this ancient city, that of Sophie Frenne, in which there is one linen handkerchief, measuring only about sixteen by eighteen inches, and yet the work is so fine and beautiful that it is valued at $500. But it is not a little remarkable that the nation pre-eminently distinguished in the Crystal Palace for its array of linen goods of all descriptions, is Ireland, a country which, when Brussels had perhaps 20,000 linen looms in operation, had not a single one in it from the Giants Causeway to the Cove of Cork. Some parts of France also were early celebrated for the making of "damask" linen goods, and Holland in the sixteenth century bore the highest character for linen shirtings and sheetings. The industrious Flemings—natives of Flanders—were no doubt the first who introduced the linen and woolen cloth Manufacture into England, and this even before the reign, of Edward First, as there was a strong colony of manufacturing Flemings in the city of Berwick when that ambitious king stormed it, and put nearly all the citizens to death. It was not, however, until after the revocation of "the Edict of Nantes," that the linen manufacture began to assume importance in Britain.—The banished Huguenots brought along with them much skill and industry in the making of linen goods. Communities of them established the linen manufacture in Nottingham, England; Dunfermline in Scotland, and Newtown, Stuart, and Ballamena, in the north of Ireland. When we say that cotton cloth was almost unknown in Europe previous to 1750, and that linen cloth alone was used for shirting and sheeting, the necessity and importance of this manufacture then becomes apparent; and when we reflect that the power loom was then unknown, the great number of hand-loom weavers engaged in the business in some of the old cities, excites no astonishment. For a long period the Dutch maintained a national superiority in the bleaching and finishing of linen goods, and previous to 1700, nearly all the cloth made in Britain and Ireland, was sent over to Holland to be bleached. In due time, however, between 1700 and 1774, many large bleach works were erected in Ireland and Scotland. These would be considered curiosities at the present day. The cloth was boiled in various alkaline lyes, and exposed to sunshine and dews, for at least six months before it was bleached. Sour milk was employed in great quantities to assist the process, and it was no uncommon sight around some bleachworks to see twenty acres of grassy meadow covered with fine linen. In 1774 Scheele, the celebrated French chemist discovered chlorine, and its powerful decolorizing qualities having soon afterwards been applied to bleaching textile fabrics, it produced an entire revolution in the whole art, for the processes of bleaching are now completed in a few days, instead of some months as in former times. In 1786 James Watt the great improver of the steam engine, introduced the bleaching by chlorine into Scotland, in the form of chloride of potash, the use of which soon began to spread, and it proved to be the knell of Dutch supremacy in the bleaching and finishing of such goods. In 1799 Charles Tennant, of Glasgow, took out a patent for combining chlorine gas with lime powder, which was also a great improvement, and as the wars of Napoleon at that time prevented Holland and Germany from manufacturing, the linen trade in Britain, and more especially in the north of Ireland, became a fixed and flourishing business. The invention of the power loom in 1786, by Dr. Cartwright, and its application to weaving linen about 1800, put the capstone on British advantages, and this is the reason why, in the Crystal Palace, both France and Belgium fail to make even the shadow of a display in comparison with Ireland—"old things have passed away."

French Linens.—There is one case of linen lawns manufactured at Cambrai, (an old city of Flanders) and exhibited by Bertrand Freres & Henry, of this city—a Paris house;—also one case of fine lawns, by H. Delame & Son, of Valenciennes, France. We have never seen finer or more beautiful lawns than these, and the embroidering of the collars and handkerchiefs, display that neatness and taste for which the French are distinguished. There is also a case of excellent coarse linen goods by Gassot & Co.

Belgian Linens and Lace—Sophie Defrenne, whose name we have already mentioned, is the great exhibitor in this department; besides the hankfs. alluded to, there are many beautiful collars, &c. Millions have heard of the famous Brussels lace, who have never seen a single inch of it; those who are desirous of seeing such goods can be gratified by a visit to the Crystal Palace. Josephine Fassen, also of Brussels, exhibits some beautiful lace collars. The manufacture of Brussels lace is conducted in rooms or apartments having earthen floors, and the atmosphere of which must be kept at a peculiar temperature, and charged with a certain amount of moisture. The success of the manufacture of either fine linen or cotton lawns, depends upon the peculiar state of the atmosphere. Very dry warm, and frosty weather, operate injuriously upon the fine threads; the weaver ceases to ply the shuttle in such weather, until an artificial atmosphere is created, because his threads both warp and woof, become brittle as glass.

German Linens.—Some very excellent table linens, &c., are exhibited by C. Buschek, and Burback & Brothers, of Gotha, exhibit some real serviceable coarse *harn* fabrics, made into buckets, hose, &c.; they also exhibit some excellent unbleached lined fabrics, of various kinds.

Irish Linen Lace and Cloth.—The fine lace belonging to Erin, is displayed in the gallery of the southeast quarter of the British Department. The house of Higgins & Son of Dublin make the finest show we think; the embroidered robes are of great richness and beauty. There is one article exhibited by this House, which is of no little interest to us Americans; we allude to a very rich handkerchief—a present for the Lady of President Pierce. It is contained in a neat frame, close to the balustrade near the picture gallery. The American eagle grasping a shaft of spears in his talons, is worked in each of the four corners, also a ship in full sail, and it has a border of an oaken chaplet. In the centre is a beautiful gold and jewelled pin, in the form of an Irish harp, surrounded with a green shamrock wreath. Forrest & Sons of Limerick and Dublin also exhibit some exceedingly rich robes, collars, handkerchiefs, &c., and the House of A. T. Stewart in this city, exhibit some cases of their imported Irish lace, which is worth a long journey, for all the ladies in our land to look upon and admire. Every single case of the linen laces in the gallery—those of Mrs. Manly and J. McDonald & Co—the latter perhaps the finest of any in the exhibtion—and one piece of pure "Honiton" about two yards long and valued at $1000, as well as those of Higgins & Co.—will afford matter for wonder, at the patience, skill, and trouble expended in decorating the fair and gay, with fabrics fragile as a wintry sun-beam, but at the same time soft and beautiful as the snowy clouds of morning kissing the green valleys of spring.

The more solid articles of linen are exhibited on the floor under the gallery; these deserve the closest scrutiny of every American, as our country is Ireland's best customer. The city of Belfast, in the north of Ireland, is the great depot of the Irish linen trade, and has enjoyed great prosperity for a number of years, especially since the introduction of the power loom, in 1839 (we believe) to that part of the country, from Scotland. Previous to that period both England and Scotland, by employing the power loom earlier, made advances upon this branch of Irish industry, but of late years, the latter has even surpassed itself, and at the present moment in the single province of Ulster, there are more spindles engaged in the manufacture of linen, than in all the countries of Europe, put together, with the exception of Britain itself. The House of Fenton & Son, of Belfast, perhaps makes the greatest display in the Crystal Palace, in heavy, fine, and coarse goods—six cases, such as shirtings, sheetings, table cloths, towels.—The damask table linen exhibited is beautiful. One case exposes flax in every state, from the seed to the fine thread, ready for the weavers *pirn*. This House was awarded a prize medal at the World's Fair. Two very fine pieces of linen exhibited by Bennett & Adams, in a case next to one of Fentons, have a prize medal attached, also granted at the World's Fair. Richardson, Sons, & Owden, of Belfast, exhibit the best piece of heavy sheeting we have ever seen; it has no peer in the Exhibition. It contains 14,700 threads in one square yard—7,200 warp, and 7,500 weft. To our readers who are not particularly acquainted with the art of weaving, we must inform them that cloth made with a finer weft than warp, is much more beautiful and finer in appearance than if the warp and weft numbers were reversed.—Messrs. Richardson & Owden prove themselves to be skillful manufacturers. Their display is very little, if any, inferior to Fenton & Sons, they also have six cases, and likewise can boast of a World's Fair Medal; Ferguson & Co., Belfast, exhibit three cases of drillings, shirtings, and table linen. Wm. Gihon & Sons, of Ballamena, have also three cases of all kinds of linen, and Dunbar McMaster & Co., of Gifford, exhibit two cases of linen thread of various colors, and of numbers from 25 to 300. This thread is neatly put up in skeins and displays great taste. This company has also four cases of what is termed fronting linen, (for shirt bosoms we suppose), but we must delay further remarks until next week.

Next week we will present some interesting information respecting flax, its growth, treatment, &c., and will at the same time have something to say about flax cotton.

Recent Foreign Inventions.

Welding Cast-Steel with Iron.—F. Felix Verdie, of Lorette Loire, France, patentee.—The iron is first heated to a red heat, then coated with borax, after which it is placed in a mould and cast-steel poured into it; after this it is either subjected to the hammering or rolling processes. The quality of borax, in effecting the cementation, in welding iron and steel, has long been known to American mechanics.

Tanning.—F. M. A., of Brussels, Belgium, patentee. The hides or skins, after being prepared for the tanning liquor, are steeped various times (receive various manipulations) in solutions of catechu, and afterwards immersed in a weak liquor of sulphuric acid and water. They are afterwards well washed in clean water.

Gutta Percha Cement—J. W. Duncan, of London, patentee. This cement is for uniting very thin sheets of gutta percha to silk or other fine fabrics. It consists of 40 parts (by weight) of gutta percha, 3 of india rubber, 3 of shellac, 14 of Canadian balsam, 35 of styrax, 4 of gum mastic, and one of the oxyde of lead. These are all mixed together in a stoneware vessel subjected to a heat of about 90° for some time, and stirred well together. It is a useful cement for various purposes.

Preparing Hemp—C. J. L. Cloux, of France, patentee.—The hemp, after being stripped, is put into a vat or tub, with a sufficient quantity of water to cover it. The water is kept at a temperature of about 50 or 60°, for 15 hours, when it is drawn off and replaced by other water, containing 2 lbs. of soda and 2 lbs. of soft soap dissolved in it, for every 100 lbs. of hemp. The heat of this liquor may be 100°, or it may be boiled in it for five hours. The hemp is then taken out and dried in the open air, or in a stove room, at a low temperature. When it is dry it is passed between fine fluted rolls, whereby it acquires the softness of flax without losing its original strength. This treatment of hemp, it is said, enables it to be spun like flax.

Protecting Iron for Roofing, &c.—Nicholas Callan, of Maynooth College, Ireland, patentee.—The sheet iron is first coated with tin in the usual way, and then dipped into a bath of molten lead and tin, and kept there until a sufficient quantity of lead adheres to the sheet along with the tin, to form an alloy coating that will protect the iron aganst the action of the weather, sea water, &c. Some zinc and antimony may be employed in the lead and tin bath.

Lightning Conductors for Ships—Sir Wm. Snow Harris, patentee. The general plan of the improvements consists in the application of a series of plates of metal, to the movable portions of the mast, and to the head of the lower fixed mast, in connection with other metallic conductors, also permanently fixed in series along the shrouds or lower rigging on each side of the vessel, and finally communicating with the sea by metallic connections fixed to the ship's sides. The claim is for constructing lightning conductors for ships and vessels, in such a manner as to cause the metal from the lower masts to pass outside of the ship instead of passing down the lower mast and through the bottom of a ship, as formerly practiced. Sir W. S. Harris is the author of an excellent work on electricity and another on "Lightning Conductors."

[Collated from our foreign exchanges, "Mechanic's Magazine," "Newman's London Journal," "Artizan," "L'Invention," Paris, &c.

Lord Palmerston declares that the cholera is caused by gaseous exhalations, and censures the Scotch Presbyterian Church for requesting a day to be appointed for fasting, instead of exerting their faculties for the removal of such noxious influences.

Chemical Red Fire.

Take three parts by weight, of powdered celestine, two of sulphur, and three of the chlorate of potash, and mix all together; this mixture will be of some service to those who manufacture *fire-works*.

The ship Maria arrived at this port on last Saturday, from Australia; this is the first ship which ever came here direct from that country.

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TO CORRESPONDENTS.

D. H., of N. Y.—You ask for a cement for belting to supersede rivets, and which will withstand the effects of both oil and water. We cannot give you the required information, for rivets are the only "cement" that we know of, which can withstand these influences.

H. M. P., of Mass.—Your experiments go to show that you are in a fair way of discovering perpetual motion, but you do not seem to have tested the heat of your air. The flame of the lamp proves nothing positively, since there might be a great deal of heat wasted in the first that was absorbed in the last experiment.

C. C., of New York—Minifie's Drawing Book is the first one we would recommend for you; study it well, and you may teach yourself. We cannot give you any more information about the Cooper Institute. If you send to "Yale," you can get a catalogue of the courses of study.

B. F. S., of Mass.—Chain-shot is old and well known, but the balls were not made like yours, which appear to be new, and so far as we know, patentable. Machines for cutting files have been patented, but we cannot send you the numbers you speak of.

J. L. S., of Ky.—The company's notice stated that gutta percha goods could be made from a material 50 per cent. cheaper than india rubber, and why the goods cost only 5 per cent. less, we cannot tell. The hose made from it is no doubt as strong as those made of india rubber, but we cannot tell you how it will stand the action of water.

J. M. C., of Vt.—You can make any matches you choose without fear, so far as we know.

J. K., of Pa.—There is some novelty in your manner of operating car brakes, but we do not discover any feature of utility not already possessed by brakes in common use. It has often been suggested to brake on the track instead of the periphery of the wheel—there are objections to it.

E. M. H., of N. Y.—We do not remember the name of the patentee of the revolving anvil block.

J. D. E., of Mass.—We do not now remember the address, of J. H. R., of N. C., an advertisement in our columns would reach him.

R. W. C., of Pa.—Haupt's work on bridge building is a good one. Appleton & Co., 200 Broadway, are the publishers.

S. G. L., of Phila.—We can see no possible chance for you to obtain a patent on your blower. It does not appear to embrace any novelty.

A. W., of Ohio.—The use of rings and springs instead of hemp for packing pistons, is a well known device. In our last volume you will find an engraving of one constructed on that principle.

W. H. W., of N. Y.—A tea kettle constructed upon essentially the same plan as yours was described in this paper a few weeks since.

H. M., of Ohio.—We understand your sketch, and if you will examine the plan of John Fitch, as employed on his first boat, you will see that your's resembles it in principle and action.

A. L., of Ill.—We suppose the apparatus you speak of might feed the mammoth press, but not having seen it we cannot say positively.

S. E. H., of Ohio.—Your electro magnetic rotary engine is not new; such machines are well known here.

F. G., of ——.—A model of a boat with a screw in the bow, is on exhibition in the Crystal Palace, it will operate a little. If the first deed is void that you speak of, can you not give a second deed? if you have the right you have the power.

G. E. I., of N, Y.—A hollow axle is not patentable. We cannot advise you to make an application.

C. T. S , of N. Y.—The employment of india rubber for the tread of car wheels is not new or patentable.

J. B. W., of N. J.—We think the plan you describe of using gutta percha tubes for feeding paper upon printing presses, is not essentially different from the use of metallic tubes, with the mode of producing a vacuum. well known to you. A model of the latter device we have in our office, and a novel one it is, too. Your application has not been heard from since your last model was sent to the Office, and it is impossible for us to inform when an answer may even be expected.

J. B. S., of Pa.—We do not see any advantage to be gained from the use of "eccentrics," as you propose.

M. Newman, 2nd. of Lanesboro, Pa., wishes to obtain good malleable iron castings, and knows not who to address.

C. R. S., of Vt.—The notices of extended patents are not sent from the Patent Office, therefore we have no way of procuring them.

J. M. G., of N. H.—We have never known of a thresher constructed in the manner described and shown in your letter. We think it is new. You speak as though you doubted our statement in regard to the hay cutter, and call upon us to state where and when we saw it. We cannot answer the question—it is not necessary that we should answer it—our opinion remains unchanged, you can reject it or not.

R. B., of N. J.—We suppose we sent you Ketchum's claims in full. "The Elongated Aperture" is not in his claim, but was patented by Forbush in 1849; it is for "an open triangular tooth or triangular hollow tooth for cutting grass or grain." It is however owned by Howard & Co., the builders of the Ketchum machines.

J. A. McM., of N. C.—Apparatus for indicating the distance travelled by a train, is old. We discover no new feature in your plan.

W. C. C., of C. W.—The true rule to obtain the horse power of your high pressure engine is to multiply the pressure of the steam on the area of piston in square inches, into the velocity, and divide by 33,000, this is the nominal power. But there is oftentimes a difference of 3 lbs. between the pressure in the boiler and the cylinder. You must look to this, and also deduct 25 per cent. for friction. Your 60 lbs. pressure, we presume, is meant to be above that of the atmosphere. This is the common rule; the term "horse-power" has a wide latitude of meaning.

W. T., of Me.—We cannot withdraw the amount your due at the Patent Office: you can order the Commissioner to send it to us.

H. D. E., of N. H.—The adaptation of a waterwheel to any other purposes than those for which it was originally intended, without any change in contrivance, could not be patented. Some changes have lately been suggested on the apparatus used for drying straw boards. We are not able to make them public.

W.B., of New York—Your silvering liquor, is the nitro-muriate of silver. Mix it with water. But what do you want to use it for?

E. B. F., of N. Y.—If you can point out the misstatement in our article on reapers we will consider it.

W. D., Jr., of Pa.—We will examine your model when it reaches us; we can judge of the invention more correctly.

E. R., of Pa.—At the Fair of the American Institute, last year, a brake was shown which operated in the same manner as yours—it is old.

M. L. U., of Ill.—The cam motion has been employed for operating sickles of reaping and mowing machines.

H. S. A., of N. Y.—In No. 29, Vol. 8, you will find our opinion fully expressed in regard to the "Engineer's Assistant."

J. V. A. W., of Ill.—If fraud has been practiced upon the Office by Mr. P., the Court has a right to take cognizance of it. We cannot advise you satisfactorily upon the subject, not being familiar with the details.

A. P., of N. J.—We are inclined to think your alleged improvement in car brakes, possesses novelty sufficient to warrant an application for a patent. You had better send us a model.

Money received on account of Patent Office business for the week ending Saturday, Nov. 26:—

G. H. H., of Pa., $20; J. G. H., of Fla., $35; J. McD., of Ct., $20; D. B. of N. J., $40; J. H., of Tex., $20; D. & S. K. F., of N. Y., $55; T. G. S., of N. J., $30; E. D., of Vt., $30: G. M. R., of N. Y., $10; R. W. D., of N. Y., $25; W. Z. W. & J. W. C., of N. Y., $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Nov. 26:—

J. D., of Pa.; G. H. H., of Pa.; M. H., of N. Y.; W. Z. W. & J. W. C., of N. Y.; J. H. R., of N. Y.; E. D., of Vt.; J. D., of Pa.

A Chapter of Suggestions, &c

ALL GONE, ALL GONE.—At the commencement of the present volume, we printed 5,000 extra copies, which we concluded would be sufficient for the subsequent demand. It is now but eight weeks since Volume Nine was commenced, and to the disappointment of many we are obliged to announce that the entire editions of two numbers, 1 and 2, are all gone, and that we shall not be able to furnish the back numbers to any parties who order after this date.

MISSING NUMBERS—Mail Subscribers who have failed to receive some of the numbers of Vol. 8, are informed that we are able to supply them with any of the numbers, from 1 to 52, EXCEPT the following, and these we are ENTIRELY out of—Nos. 2, 3, 4, 10, 12, 14, 15, 16 17, 18, 19, 20, 21, 22, 25, 26, 47, 48. 49, 50, 52.

PATENT LAWS, AND GUIDE TO INVENTORS—We publish and have for sale, the Patent Laws of the United States—the pamphlet contains not only the laws but all information touching the rules and regulations of the Patent office. Price 12 1-2 cents per copy.

RECEIPTS—When money is paid at the office for subscriptions, a receipt for it will always be given, but when subscribers remit their money by mail, they may consider the arrival of the first paper a bonafide acknowledgment of the receipt of their funds.

BACK NUMBERS AND VOLUMES—In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement: Of Vols. 1, 2, 3, and 4—none. Of Vol. 5, all but six numbers, price, in sheets, $1; bound, $1,75. Of Vol. 6, all; price in sheets, $2; bound, $2,75. Of Vol. 7, all; price, in sheets, $2; bound, $2,75. Of Vol. 8, all; price, in sheets, $2; bound, $2,75.

GIVE INTELLIGIBLE DIRECTIONS—We often receive letters with money enclosed, requesting the paper sent for the amount of the enclosure, but no name of State given and often with the name of the post-office also omitted. Persons should be careful to write their names plainly when they address publishers, and to name the post office at which they wish to receive their paper, and the State in which the post-office is located.

PATENT CLAIMS—Persons desiring the claim of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office, stating the name of the patentee, and enclosing $1 for fees for copying.

PATENTEES—Remember we are always willing to execute and publish engravings of your inventions, providing they are on interesting subjects, and have never appeared in any other publication. No engravings are inserted in our columns that have appeared in any other journal in this country, and we must be permitted to have the engravings executed to suit our own columns in size and style. Barely the expense of the engraving is charged by us, and the wood-cuts may be claimed by the inventor, and subsequently used to advantage in other journals.

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American and Foreign Patent Agency.

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express, or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

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WEIGHING AND PACKING MACHINE—This machine is particularly adapted for the weighing and packing of ground spices, coffee, teas, saleratus, cream tartar, British luster, arrowroot, drugs, prepared flour, farina, starch, cocoa, oat meal, yeast powders, seeds, snuff, ground herbs, or any like material, which may require to be put in packages, from ounces to pounds. Its advantages over the old method of packing by hand, are manifest. One of these machines will, with the aid of one person, weigh accurately, and pack neatly, from 4 to 5,000 packages per day. It requires very little power to run it, and is not liable to get out of repair. Having purchased the exclusive right to manufacture and sell throughout the United States, we are prepared to execute orders for the machines or sale of sectional rights, on reasonable terms. N. B. HARRIS & Co., Proprietors of the Excelsior Steam Spice Mills, Philadelphia, Pa. 12 13

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STEAM ENGINE—50 horse-power for sale cheap,—Apply between 2 and 6 P. M., to C. MORRIS, 109 East 15th, st., Third avenue, N. Y. 1*

CLOCK'S FOR CHURCHES, COURT HOUSES, &c.—Regulators for Astronomical purposes, Jewellers; also Time Pieces for Session Rooms, Railroad Stations, Offices, &c., which for accuracy of time and durability have proved (it is believed) equal to any made in Europe or this country. Glass Dials for illumination, and other kinds furnished. Address SHERRY & BYRAM, Oakland Works, Sag Harbor, N. Y. 10eowtf

EUROPEAN PATENTS.—MESSRS. MUNN & CO. pay especial attention to the procuring of Patents in foreign countries, and are prepared to secure patents in all nations where Patent Laws exist. We have our own special agents in the chief European cities; this enables us to communicate directly with Patent Departments, and to save much time and expense to applicants

BRITISH COMMERCIAL LIFE INSURANCE COMPANY—London and America.—Capital $3,000,000. Referees in New York—His Excellency Hamilton Fish, late Governor of the State of New York; Anthony Barclay, Esq., H. B. M. Consul; Stephen Whitney, Esq., James Gallatin, Esq., Samuel Wetmore, Esq., Henry Grinnell, Esq., Hon. Judge Campbell, John Cryder, Esq., J. Phillips Phœnix, Esq., John H. Hicks, Esq. This Company has been in successful operation upwards of thirty years; it offers the following advantages to Insurers:—Low rates on insurances without profits; loans granted on policies; half premium may remain on loan; no extra charge for crossing the Atlantic; California and Australian risks taken. The profits under the Mutual Principle are divided every six years. Bonuses paid in cash; last bonus declared was $34 per cent. LUMLEY FRANKLIN, GEO. M. KNEVITT, Agents, 65 Wall street, New York. 11 4

SCOTT & DRAPER'S PATENT OILER—A cut of which appears in No. 11, present Volume Sci. Am., may be obtained of E. D. & G. DRAPER, Hopedale, Milford, Mass., or of ANDREWS & JESUP, 70 Pine street, New York. 11 4*

MACHINIST'S TOOLS—STEELE & STANNARD, Jersey City, N. J., have on hand, and are building constantly, Lathes, Planing Machines, Drillers, and other Tools, of a superior character; double gear heavy Drilling Machines, to take in 48 inches in diameter; general character of Tools extra heavy. 11 2*

BAKER'S IMPROVED STEAM BOILER FURnace, as used at the Crystal Palace, &c. Apply to J. AMORY, 28 State st, Boston, General Agent. 11 tf

STEAM WORKS FOR SALE—Land 40x60 feet; 3 story building, fire-proof boiler house; 10 horse engine and tubular boiler, side planer; cutting, splitting, and upright saws, wood lathes, baluster, fence pale, boring, ship plug and bung machine, &c. &c. All new and in perfect order. Employing 12 men. Subscriber's health has failed him. Price $7,300: on favorable terms, or he would retain an interest. E. A. HILL,
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COCHRAN'S QUARTZ CRUSHER—These machines having proved by practical operation at various gold mines their superiority over all others, for pulverising Quartz Rock, are recommended with confidence to parties in want of such machinery. A machine can be seen in daily operation in this city, on application to JOHN S. BUSSING & CO.,
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T. H. LANG, (late foreman at the New York Novelty Works), F. COOK, H. McCLELLAND. 7 3m

MACHINERY.—S. C. HILLS, No. 12 Platt-st., N. Y. dealer in Steam Engines, Boilers, Iron Planers Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's, and Law's Planing Machines; Dick's Presses, Punches, and Shears; Morticing and Tennoning Machines; Belting; Machinery Oil, Beal's Patent Cob and Corn Mills; Burr Mill and Grindstones; Lead and Iron Pipe, &c. Letters, to be noticed, must be post-paid.
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C. B. HUTCHINSON'S PATENT STAVE Cutting Machines—The best in use, and applicable alike to thick and thin staves, for barrels, hogsheads, &c.; also his Head Cutting and Turning, and Stave Jointing and Crozing Machines. This machinery reduces the expense of manufacturing at least fifty per cent. For machines or territorial rights, apply to C. B. HUTCHINSON & CO., Syracuse, N. Y. 2tf

1853. WOODWORTH'S PATENT PLANing, Tonguing, Grooving, Rabeting, and Moulding machine.—Ninety-nine hundredths of all the planed lumber used in our large cities and towns continues to be dressed with Woodworth's Patent Machines. Price from $150 to $800. Two machines are at the Crystal Palace. For rights in all parts of New York and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 1 amtf

UNITED STATES PATENT OFFICE,
Washington, Nov. 12, 1853.

ON THE PETITION of Samuel S. Allen, of Salem, in the County of Salem, and State of New Jersey, formerly of Miamisburg, Ohio, praying for the extension of a patent granted to him on the 15th day of January, 1840, to which improvements were added on the 29th day of March, 1841, for an improvement in Machines for Husking and Shelling Corn, for seven years from the expiration of said patent, which takes place on the 15th day of January, eighteen hundred and fifty-four—

It is ordered that the said petition be heard at the Patent Office on Saturday, the 14th of January next, at 12 o'clock, M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Pennsylvania, Philadelphia, Pennsylvania; Evening Post, and Scientific American, New York: Boston Post, Boston, Massachusetts, and Patriot, Concord, New Hampshire; Enquirer, Cincinnati, Ohio, once a week for three successive weeks previous to the fourteenth day of January next. CHARLES MASON,
Commissioner of Patents.

P. S.—Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 11 3

NOVA SCOTIA AND NEW BRUNSWICK PATENTS—The undersigned will procure Letters Patent for the Provinces of Nova Scotia and New Brunswick, and will promptly forward all information relative to such matter, upon the receipt of a reasonable fee.
PETER STUBS,
Barrister, Attorney at Law and Notary Public.
St. John, N. B. 9tf

ENGINEERING.—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers and machinery of every description. Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic, Self-adjusting Conical Packing, Faber's Water Gauge, Sewell's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, etc., etc.
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7 13* Consulting Engineer, 64 Broadway.

NICHOLS' PATENT PARAGON SAFETY CANS and Glass Metallic-lined Lamps.—These beautiful glass lamps protect against breakage as well as against explosion. They are infinitely superior to all others. Orders addressed to the N. E. or Sandwich Glass Cos., Boston, Mass., will be promptly answered. 10 10*

THE NEW HAVEN MANUFACTURING CO.—New Haven, Conn., having purchased the entire right of E. Harrison's Flour and Grain Mill, for the United States and Territories, for the term of five years, are now prepared to furnish said mills at short notice. These mills are unequalled by any other mill in use, and will grind from 20 to 30 bushels per hour of fine meal, and will run 24 hours per day, without heating, as the mills are self-cooling. They weigh from 1400 to 1500 lbs., of the best French burr stone, 30 inches in diameter; snugly packed in a cast-iron frame, price of mill $200, packing $5. Terms cash. Further particulars can be had by addressing as above, post-paid, or to S. C. HILLS, agent N. H. M. Co., 12 Platt st., N. Y. 5 tf

NEW HAVEN MANUFACTURING COMPANY —Tool Builders, New Haven, Conn., (successors to Scranton & Parshley) have now on hand $25,000 worth of Machinists' Tools, consisting of power planers, to plane from 5 to 12 feet; slide lathes from 6 to 18 feet long; 3 size hand lathes, with or without shears; counter shafts to fit all sizes and kinds of universal chuck gear cutting engines; drill presses, index plates, bolt cutters, and 3 size slide rests. The Company are also manufacturing steam engines. All of the above tools are of the best quality, and are for sale at 25 per cent. less than any other tools in the market. Cuts and list of prices can be had by addressing as above, post-paid. Warehouse No. 1 Platt st., New York, S. C. HILLS, Agent N. H. Manufacturing Co. 5tf

PLANING, TONGUING, AND GROOVING—BEARDSLEE'S PATENT.—Practical operation of these Machines throughout every portion of the United States, in working all kinds of wood, has proved them to be superior to any and all others. The work they produce cannot be equalled by the hand plane. They work from 100 to 200 feet, lineal measure, per minute. One machine has planed over twenty millions of feet during the last two years, another more than twelve millions of of feet Spruce flooring in ten months.. Working models can be seen at the Crystal Palace, where further information can be obtained, or of the patentee at Albany, N. Y
1 tf GEO. W. BEARDSLEE.

PARSONS' SELF-STRAINING SAW—Requires only ten pounds' weight to strain it, and combines the advantages of both muley and gate or sash mills, will bear as much feed, is as easily kept in order, will cut as much lumber with one-fourth less power, and is in successful use in five States. A working model is in the Crystal Palace, where further information can be had, or of the proprietor at Wilkesbarre, Penn., JAMES JONES. S. E. PARSONS, Agent.

PATENTS OF INVENTION—ISAAC B. FUTVOYE, Patent Agent, Quebec, undertakes to procure letters patent of invention for the Province of Canada. I. B. F. will dispose of any kind of Patented Articles on Commission. 4 tf

A. B. ELY, Counsellor at Law, 52 Washington street, Boston, will give particular attention to Patent Cases. Refers to Messrs Munn & Co., Scientific American. 16tf

LEONARD'S MACHINERY DEPOT, 109, Pearl st., and 60 Beeaver, N. Y.—Leather Banding Manufactory, N. Y.—Machinist's Tools, a large assortment from the "Lowell Machine Shop," and other celebrated makers. Also, a general supply of mechanics' and manufacturers' articles, and a superior quality of oak-tanned Leather Belting. P. A. LEONARD.
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LOGAN, VAIL & CO., No. 9 Gold st., New York.—Agency for Geo. Vail & Co., Speedwell Iron Works, Morristown, N. J., furnish and keep on hand Portable Steam Engines of various sizes, Saw and Grist Mill Irons, Hotchkiss's Water Wheels, Iron Water Wheels of any size, Portable Saw Mills, complete; Bogardus's celebrated Planetary Horse Powers; heaving forgings and castings for steamboats and rolling mills, Ratchet Drills of superior quality for machinists, Saw Gummers, Hand Drills, Tyre Benders, and shafting and machinery generally.
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Scientific Museum.

On the Recovery of Gold and Silver from the Fluids employed for Electro-Plating and Gilding.

The following method of recovering gold and silver from the fluids employed in electro-plating and gilding is described by Prof. Bolley, in the "Centrablatt," (German magazine of science.) They will be of interest to those engaged in this business:—

The cyanide of gold, dissolved in an excess of cyanide of potassium, resists most means of separation; even sulphuretted hydrogen produces no precipitate in it. The complete separation of the gold cannot be effected in the humid way; and this has given rise to the propositions of Bottcher, Hessenberg, Elsner and others, to evaporate the fluid, mix the dry residue with an equal quantity of litharge, fuse the mixture at a strong red heat, and dissolve the lead from the fused mass by hot dilute nitric acid; by this means the gold is left as a loose sponge. A more recent proposition is that of Wimmer, by which the mass left by evaporating the fluid to dryness on the water-bath is mixed with one and a half times its weight of nitrate of potash, and thrown in small portions into a red-hot Hessian crucible. The explosions must be waited for, and the process continued until the entire mass runs smoothly. The first process has nothing against it, except the necessity of a strong fire and the employment of nitric acid; the second, on the contrary, is very unpleasant and unsafe in its performance. It is sufficiently well known that there is no substance with which nitrate of potash detonates so violently when heated as with cyanide of potassium. If the portions of the mixture employed be only a little too large, very violent explosions are produced, which cannot take place without loss.

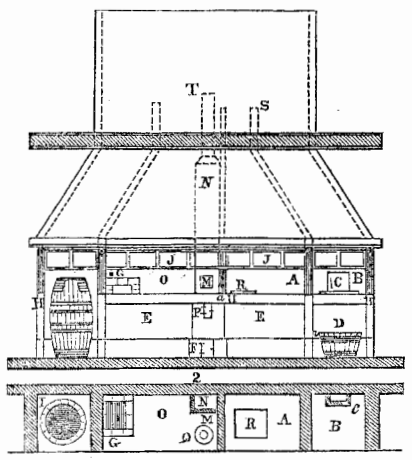
The following process may be adopted in small operations with a platinum crucible over a spirit-lamp. The dried mass of salts is mixed with an equal quantity of powdered muriate of ammonia, and gently heated. The ammoniacal salts decompose the cyanides of the metals, forming cyanide of ammonium, which is decomposed and volatilized, whilst the acid of the amoniacal salt or the halogen combined with the ammonium unites with the metal which had been combined with cyanogen. In the present case, muriate of ammonia forms chloride of potassium, chloride of iron (when ferro-cyanide of potassium has been employed) and chloride of gold. The latter is readily decomposed, with formation of metallic gold; the other, at least partially, with separation of peroxyde of iron, in fine crystalline scales. Undecomposed chloride of iron, as well as chloride of potassium, may be extracted with water after complete decomposition, for which a slight red heat is sufficient; the gold forms a coherent spongy mass; the iron fine light scales, which are readily separable by mechanical means. If any gold remain in the form of dust with the peroxyde of iron, it may be dissolved out with nitromuriatic acid (the calcined oxyde of iron long resisting the action of the acid), and the gold thrown down by protosulphate of iron. In most cases this mode of separation will be unnecessary.—The author has convinced himself by the employment of measured volumes of the same solution of gold, evaporation, heating with muriate of ammonia, and so forth, that even the quantity of gold in such solutions may be determined with sufficient exactness.

The same process may be adopted with plating fluids; chloride of silver is obtained together with oxide of iron (from the ferrocyanide of potassium); the chloride is readily dissolved by ammonia; metallic silver, of which however but little or none is formed, is extracted by nitric acid. It is unnecessary to say that the residue is operated upon in the usual manner to obtain the silver; nevertheless, as the decomposition of the plating fluids may be effected in the humid way by means of sulphuretted hydrogen, this process may not be so frequently adopted for silver.

Lastly, it may be useful to inform those persons who occupy themselves with electro-plastic processes, that the employment of chloride of ammonium or a salt of ammonia in this manner, furnishes a ready means of testing the composition of such fluids as are used in the formation of a galvanic coating. For solutions of copper the author employs sulphate of ammonia, because when muriate of ammonia is employed, chloride of copper is formed, which is partially volatilized with the undecomposed sal-ammoniac, producing a loss of copper.

Gilding---No. 3.

(Continued from page 88.)



3rd.—The annexed figures represent an outline of a gilding factory at Paris, as described by Dr. Ure.

Figure 1 is a front elevation, figure 2 is a plan view. This is for fire gilding as described in No. 1.

F is the ash-pit of this furnace; N is the chimney of this furnace constructed of bricks, as far as the contraction of the great chimney, S, of the forge, and which is terminated by a summit pipe rising two or three yards above this contraction; B is the forge for annealing the pieces of bronze; for drying the gilded pieces, &c. C is the chimney of communication between the annealing forge, B, and the space, D, below the forge. This chimney serves to carry the noxious fumes into the great vent of the factory. U is the bucket for the brightening operation; A is the forge for passing the amalgam over the piece; R is a shelf for the brushing operations; E E are coal cellars; O is a forge for the deadening process; G is a furnace for the same; M is an opening into the furnace of appel, by which vapors may be let off from any operation by taking out the plug at M; I is a cask in which the pieces of gilded brass are plunged for the deadening process. The vapors rising thence are carried up the general chimney. J J is a casement with glass panes, which serves to contract the opening of the hearths, without obstructing the view. The casement may be rendered movable to admit larger objects; H H are curtains of coarse cotton cloth, for closing at pleasure, in whole or part, one or several of the forges or hearths, and for quickening the current of air in the places where the curtains are not drawn; Q is an opening above the draught furnace, which serves for the heating of the deadening pan.

4th.—Gilding on Polished Iron and Steel.—If a nearly neutral solution of gold in muriatic acid be mixed with sulphuric ether, and agitated; the ether will take up the gold, and float above the denser acid. When this auriferous ether is applied by a hair pencil to brightly polished iron or steel, the ether flies off, and the gold adheres. It must be fixed by polishing with the burnisher. This gilding is not very rich or durable. In fact, the affinity between gold and iron is feeble, compared to that between gold, copper, or silver. But polished iron, steel, and copper, may be gilded with heat, by gold leaf. They are first heated till the iron takes a bluish tint, and till the copper has attained to a like temperature; a first coat of gold leaf is now applied, which is pressed gently down with a burnisher, and then exposed to a gentle heat. Several leaves, either single or double, are thus applied in succession, and the last is burnished down cold.

5th.—Cold Gilding.—Sixty grains of fine gold, and twelve of rose copper are to be dissolved in two ounces of aqua regia. When the solution is completed it is to be dropped on clean linen rags, of such bulk as to absorb all the liquid, they are then dried, and burned into ashes. These ashes contain the gold in powder.

When a piece is to be gilded, after subjecting it to the preliminary operations of softening or annealing and brightening, it is rubbed with a moistened cork, dipped in the above powder, till the surface seems to be sufficiently gilded. Large works are thereafter burnished with pieces of hematite, and small ones with steel burnishers, along with soap water.

In gilding small articles, as buttons, with amalgam, a portion of this is taken equivalent to the work to be done, and some nitrate of mercury solution is added to it in a wooden trough; the whole articles are now put in, and well worked about with a hard brush, till their surfaces are equably coated. They are then washed, dried, and put altogether into an iron frying pan, and heated until the mercury begins to fly off, when they are turned out into a cap, in which they are tossed and well stirred about with a painter's brush. The operation must be repeated several times for a strong gilding.—The surfaces are finally brightened by brushing them along with small beer or ale grounds.

Gold wire is formed by drawing a cylindrical rod of the metal, as pure as may be, through a series of holes punched in an iron plate, diminishing progressively in size. The gold, as it is drawn through, becomes hardened by the operation, and requires frequent annealing.

Gold thread, or spun gold, is a flatted silver-gilt wire, wrapped or laid over a thread of yellow silk, by twisting with a wheel and iron bobbins. By the aid of a mechanism like the braiding machine, a number of threads may thus be twisted at once by one master wheel. The principal nicety consists in so regulating the movements that the successive volutions of the flatted wire on each thread may just touch one another, and form a continuous covering. The French silver for gilding is said to be alloyed with five or 6 pennyweights, and ours with twelve pennyweights of copper in the pound troy. The gold is applied in leaves of greater or less thickness, according to the quality of the gilt wire. The smallest proportion formerly allowed was 100 grains of gold to one pound, or 5,760 grains of silver; but more or less may now be used. The silver rod is encased in the gold leaf, and the compound cylinder is then drawn into round wire down to a certain size, which is afterwards flatted in a rolling mill.

Artificial Production of Diamond Powder.

Some considerable sensation has been produced in the scientific circles of Paris, by the announcement of the artificial production of diamond powder. M. Despretz has made two communications to the *Academie des Sciences*, upon carbon. In these he states that placing at the inferior pole of a voltaic battery, a cylinder of pure charcoal (its purity being secured by preparing it from crystallized white sugar candy) and at the superior pole a bundle of fine platinum wires, so arranged that the charcoal was in the red portion of the electric arc, and the platinum in the violet—he found the carbon volatilized, and collected on the platinum wires in a changed state. In these experiments the current has been continued a month in activity and the powder collected on the wires has been found to be sufficiently hard to polish rubies with great rapidity, and when burnt it left no residue. M. Despretz asks himself: Have I obtained crystals of carbon which I can separate and weigh, in which I can determine the index of refraction and the angle of polarization without doubt? No; I have simply produced by the electric arc, and by weak voltaic currents, carbon crystallized in black octohedrons, in colorless and translucent octohedrons, in plates, also colorless and translucent, which possess the hardness of the powder of the diamond, and which disappear in combustion without any sensible residue. A similar result has been obtained by decomposing a mixture of chloride of carbon and alcohol, by weak galvanic currents. The black powder deposited was found to possess equal hardness with that which was sublimed and rubies were readily polished by it.

We noticed some of M. Despretz's experiments in Volume 5: he will yet make *the diamond*.

The Eighth Avenue Cars have a sign "Crystal Palace," on them, and they do not run within three blocks of the Exhibition. Strangers coming to this city are often deceived by such a sign.

LITERARY NOTICES.

The New Year, 1854.—On the first of January next, "Gleason's Pictorial" will commence its sixth volume, and will appear vastly improved in all respects, with a superb new heading, new type and dress throughout, and will be printed upon the finest paper. As the proprietor of the "Pictorial" has purchased the entire good-will of Barnum's New York "Illustrated News," and has merged that journal in the "Pictorial," the public will reap the advantage of this concentration of the strength of the two papers upon one, both in the artistic and literary departments. The same brilliant host of contributors and artists will be engaged on "Gleason's Pictorial," as heretofore, and a large addition is also made to the corps, both in talent and number. The most liberal arrangements have been completed, and such as will enable the proprietor to produce by far the finest illustrated journal yet published, and much superior to the present issue of the paper. The columns of the "Pictorial" will constantly be beautified by all that can please and instruct in art and nature, and its literary department will fully sustain the reputation it has so long enjoyed. The pages of "Gleason's Pictorial" will contain views of every populous city in the known world, of all buildings of note in the eastern and western hemisphere, of all the principal ships and steamers of the navy and merchant service, with fine and accurate portraits of every noted character in the world, both male and female. Sketches of beautiful scenery, taken from life, will also be given, with numerous specimens from the animal kingdom, the birds of the air, and the fish of the sea, and will present in its mechanical execution an elegant specimen of art. It will contain 1664 square inches, giving a great amount of reading matter and illustrations—and forming a mammoth weekly paper of 16 octavo pages. Terms $3 per annum. Published every Saturday, by F. Gleason, corner of Tremont and Bromfield sts, Boston, Mass., and S. French, corner of Nassau and Spruce sts, New York, agent.

The Electric Telegraph—With an historical account of its rise and progress, by Lawrence Turnbull, M. D.; published by A. Hart, Philadelphia. This is the second edition of Dr. Turnbull's work, and is the best general history of the Telegraph published. It is revised and improved from the first edition.

Templeton on the Steam Engine—This is a very neat volume of the "Practical Series," published by Henry C. Baird, Philadelphia. The author is Wm. Templeton an English engineer, and is very useful as a pocket companion for engineers.

The Illustrated Magazine of Art—For November, contains a large number of beautiful engravings of scenes in the old world, a fine portrait of Henry Clay, besides several engravings of articles on Exhibition at the Crystal Palace. The artistic and literary character of this work is of a superb order, and evinces good taste and much ability. A. Montgomery, publisher, 17 Spruce st, N. Y.

Graham's Magazine—For December, is a very superb number. It contains several fine illustrations. Those representing scenery in Wales are accompanied with an article in continuation from the last number. The articles are all very ably written. A new volume of Graham commences with the January number. It is a capital magazine and deserves well of the American reader. Stringer & Townsend, 222 Broadway, agents.

Putnam for December has been received. It is as usual full of interesting matter. With the new volume they promise increased attractions.

"Jane Seton, or the King's Advocate," by James Grant.—This very interesting novel has just been issued from the press of Messrs. Stringer & Townsend, of this city; it is an ingenious and gifted production, and must have many readers.

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